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**OP-119: Examining the role of (un)conscious determinants in online gambling:
Complementing the theory of planned behavior with the concept of habit**

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PLENARY PRESENTATIONS

PL-01

Internet addiction: Current theoretical considerations and future directions

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Background and aims: Internet-gaming disorder has been included in the appendix of the DSM-5 indicating that it is likely a relevant clinical phenomenon, which deserves further attention. Beyond the addictive use of Internet games, other types of Internet applications are also discussed as being used addictively, for example communication applications, pornography, gambling, and shopping applications. Based on previous research from both the substance and the behavioral addiction area, theoretical considerations of the development and maintenance of specific types of Internet-use disorders are suggested. *Methods:* The theoretical model of Internet addiction by Brand et al. (2014) and that by Dong and Potenza (2014) have been integrated into a new theoretical framework. In addition, very recent articles on Internet-gaming disorder and other types of an addictive use of specific Internet applications have been considered. *Results:* The Interaction of Person-Affect-Cognition-Execution (I-PACE) model of specific Internet-use disorders has been suggested (Brand et al., 2016). The I-PACE model is considered a process model, which specifies several predis-

posing factors (e.g., neurobiological and psychological constitutions), moderating variables (e.g., coping style, Internet-use expectancies, and implicit associations), and mediating variables (e.g., affective and cognitive responses to internal and external triggers), which act in concert with reduced inhibitory control and executive functioning. On the brain level, a dysfunctional interaction of limbic and para-limbic structures, e.g. the ventral striatum, and prefrontal areas, particularly the dorsolateral prefrontal cortex, is considered a main neural correlate of specific Internet-use disorders. These neural correlates of Internet-use disorders are consistent with what is known about other types of behavioral addictions. *Conclusions:* The I-PACE model summarizes the mechanisms potentially underlying the development and maintenance of specific Internet-use disorders and also reflects the temporal dynamics of the addiction process. The hypotheses summarized in this model should be specified for the specific types of Internet-use disorders, such as Internet-gaming, gambling, pornography-viewing, shopping, and communication.

PL-02

Pathological gamblers: Comorbid psychiatric diagnoses in patients and their families. The differences between the male and female gamblers

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Objectives: Pathological gambling is a highly prevalent and disabling impulse control disorder. But researchers believe that gender differences effect the gamblers behavior in terms of the selected gambling, time, economical burden and dual psychiatric diagnosis. Our major hypothesis was to explore that pathological gambling associated with anxiety and mood spectrum disorders as well as addictive disorders also the family relationship with all these disorders. *Methods:* Fifty-two male and thirty-one female pathological gamblers and their first-degree relatives (n = 93 whole sample/50 male relatives) completed a semi-structured DSM-IV-based diagnostic interview as well as a series of data collection instruments including the South Oaks Gambling Scale, the Hamilton Rating Scale for Depression, the

Hamilton Rating Scale for Anxiety, the Yale-Brown Obsessive-Compulsive Scale, and the Young Mania Rating Scale. *Results:* We found higher prevalence of alcohol, substance abuse, problematic gambling, depression, and anxiety disorders in the pathological gamblers and their first-degree relatives than in the control group in both sex. In particular, the scores on the Hamilton Rating Scale for Depression, the Hamilton Rating Scale for Anxiety, and the Yale-Brown Obsessive-Compulsive Scale were higher in the family study group than in the control group. However alcohol and sex addictions are related to male gamblers group rather than female gamblers. Moreover, female gamblers have more obsessive behavior and thoughts rather than male gamblers. *Conclusions:* Our finding of a high

prevalence of psychiatric comorbidity in pathological gamblers and their families raises the question of the proper classification of pathological gambling in the DSM. Fur-

thermore, the pattern of psychiatric disorders seen in the first-degree relatives can lead to new insights about the Ethiopathology of pathological gambling.

PL-03

Trans-diagnostic treatment of behavioral addictions

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Although research on behavioral addiction is still in an early stage, recent advances in our understanding of motivation, reward, and addiction, have provided substantial insight into the common clinical presentation, neurocognition, and possible shared pathophysiology of these disor-

ders. This talk will discuss how understanding these elements may provide for common psychological and pharmacological approaches to individuals with these disabling conditions and will suggest ongoing challenges for the future.

PL-04

Keynote for ICBA Conference (Haifa 2017) Behavioural tracking in gambling: Implications for responsible gambling, player protection, and harm minimization

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Social responsibility, responsible gambling, player protection, and harm minimization in gambling have become major issues for both researchers in the gambling studies field and the gaming industry. This has been coupled with the rise of behavioural tracking technologies that allow companies to track every behavioural decision and action made by gamblers on online gambling sites, slot machines, and/or any type of gambling that utilizes player cards. This paper has a number of distinct but related aims including: (i) a brief overview of behavioural tracking

technologies accompanied by a critique of both advantages and disadvantages of such technologies for both the gaming industry and researchers; (ii) results from a series of studies carried out using behavioural tracking (particularly in relation to data concerning the use of social responsibility initiatives such as limit setting, pop-up messaging, and behavioural feedback); and (c) a brief overview of the behavioural tracking tool *mentor* that provides detailed help and feedback to players based on their actual gambling behaviour.

PL-05

Buying Disorder: A widely ignored but prevalent behavioral addiction

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Background and aims: The aim of this talk is to summarize the current knowledge regarding Buying Disorder (BD) and to offer thoughts regarding classification. *Methods:* Review of the current literature. *Results:* Buying disorder (BD) is often neglected or minimized. This is in contrast with representative surveys suggesting prevalence estimates of BD of approximately 5% in modern consumer societies. BD is defined by an extreme preoccupation with shopping/buying, by overpowering urges to buy, and by recurrent buying episodes in which the person purchases more than he or she can safely afford, eventuating in indebtedness, disruption of family life and personal relationships, and occasionally in unlawful behavior (e.g., fraud). The purchased merchandise seldom or never gets used but instead is hidden, forgotten, hoarded or given away. As the disorder progresses, shopping becomes more and more a maladaptive method of coping to alleviate

negative feelings, avoid self-dissatisfaction, escape from interpersonal and other conflicts, and to satisfy identity-related needs. Although offline and online BD share core features, there is not yet a clear view on how similar or different the phenomenology and etiology of traditional offline BD and Internet-shopping disorder are. Cognitive-behavioral therapy seems to be effective in the treatment of patients with BD. The understanding of contributing neurobiological and etiological factors of BD is still limited. Recent investigations found increased reward dependence, specific cue-reactivity, craving towards shopping-related cues, and decision-making deficits in patient with BD. *Conclusions:* Given the commonalities with addictive disorders, BD might be considered a non-substance-related disorder. Future research should address diagnostic criteria, classification, neurobiology and etiology of BD.

ORAL PRESENTATION

OP-01

Impulse control and pain: A possible link in Parkinson's disease.

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Background and aims: Dopaminergic dysregulation syndrome (DDS) refers to the compulsive use of dopaminergic replacement therapy, so that patients excuse an ineffectiveness of medications during "off" period, to addict of dopaminergic drugs in excess of those required to control their motor symptoms. Mechanism underlying DDS are not clear, although it has been linked to dysfunctional brain reward networks. The prevalence in Parkinson's disease (PD) patients is 4%. Age at onset and novelty-seeking personality traits are considered to be the two strongest predictors of DDS in PD patients. Pain is very frequent in individuals with Parkinson's disease and may partially respond to L-dopa (LD). Our hypothesis is that off related pain may represent an internal cue to increase the demand of therapy within a behavioral addiction LD-related. **Methods:** Eighty PD patients were randomly recruited, according to these exclusion criteria: (a) with a long duration of disease (more than 15 years) (b) with a cognitive impairment (MMSE < 23). We analyzed the following variables: sex, age, duration of disease, Hoehn & Yahr stage, UPDRS

score, dopamine dose equivalent per day (DDED), DDS score item (UPDRS), King Pain Scale score, the Parkinson's disease Impulsive-Compulsive Disorders Questionnaire (QUIP) score. **Results:** A positive DDS UPDRS score is present in 22% of our sample PD patients, and it correlates significantly with fluctuation-related King pain score ($p < 0.001$). A positive QUIP score, describing an impulsive behavior, such as compulsive shopping, punning, hypersexuality, gambling, is present in half of cases with DDS. In our sample, the DDED is higher in the group with chronic pain compared with the group without ($p < 0.042$). **Conclusions:** In our population of study, patients with DDS show frequently other type of compulsive behavior. These patients present a positive correlation with motor fluctuation-related pain. Even if this type of pain may be alleviated by LD, its intake may increase the quote of impulsivity and at end favorite pain again. These findings may encourage new therapeutical strategies aimed to reduce pain in PD, by abolishing extradoses of LD and treating directly impulsivity.

OP-02

Online psychotherapy among problem poker gamblers: 3 years of follow up

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Background and aims: Targeted online interventions among the most at-risk gamblers could reduce the treatment gap for addictive disorders. We conducted a study assessing the efficacy of 3 modalities of internet-based psychotherapies with or without guidance, compared to a control condition, among non-treatment seeking online poker problem gamblers tracked in their gambling environment. Although high attrition rate on the primary judgment criterion, we showed that, at 6 and 12 weeks in the three intervention groups, total loss and mean loss per session increased, whereas they decreased in the control group. The aim of this study was to assess gambling behavior of included gamblers at 1 and 3 years of follow up. **Methods:** All active poker gamblers on

the Winamax website were systematically offered screening. All problem poker gamblers identified with a Problem Gambling Severity Index (PGSI) score ≥ 5 were proposed to be included in the trial. Problem gamblers were randomized into four groups: (a) waiting list (control group), (b) personalized normalized feedback on their gambling status by email, (c) an email containing a self-help book to be downloaded with a Cognitive Behavioral Therapy (CBT) program without guidance, and (d) the same CBT program emailed weekly by a trained psychologist with personalized guidance. We collected player account-based gambling data automatically at 1 and 3 years of follow up. **Results and Conclusions:** Analyses are being performed.

OP-03

Attentional bias and inhibition in males with tendency to Internet-pornography-viewing disorder

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Background and aims: Recent studies investigated the interference of addiction-related cues with cognitive processes in Internet-pornography-viewing disorder (IPD) and found comparable results to those reported for substance-use disorders (SUD). In the I-PACE (Interaction of Person-Affect-Cognition-Execution) model of specific Internet-use disorders, it has been suggested that craving, attentional bias, and dysfunctional inhibitory control are main processes underlying the development and maintenance of Internet-use disorders (Brand et al., 2016). In the current study, we investigated particularly the association of attentional bias, inhibitory control, and symptoms of IPD. **Methods:** To investigate these relationships, two experimental studies comparing male participants with high and low tendencies towards IPD were conducted. Tendencies towards IPD were assessed with the short version of the Internet Addic-

tion Test modified for Internet sex sites (Laier et al., 2013). In the first study, 61 participants completed a Visual Probe Task (Mogg et al., 2003) which was modified with pornographic stimuli. In the second study, 12 participants were investigated so far with two modified Stop-Signal Tasks (Logan et al., 1984) which included task-irrelevant neutral and pornographic stimuli. **Results:** Participants with high tendencies towards IPD showed higher attentional bias to pornographic stimuli in comparison to participants with low tendencies towards IPD. The first analyses from the second study revealed that males with high tendencies towards IPD had longer inhibition times and more errors in stop trials especially when confronted with pornographic pictures. **Conclusions:** Results provide further evidence for similarities between IPD and SUD. Clinical implications are discussed.

OP-04

The associations between smart phone use and interpersonal sensitivity

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Background and aims: Interpersonal sensitivity is a wide construct that includes interpersonal behavior and perception of others including thoughts and feelings based on non-verbal and verbal cues. This study investigated the effects of smartphone use on interpersonal sensitivity. **Methods:** One hundred and twenty students aged 20–32, 99 women 21 men, were randomly assigned to 3 conditions: (1) face to face interaction with an actress, (2) listening to an audiotaped phone call made by an actress, or (3) reading a text describing these situations on a “WhatsApp” application on a smartphone. They were required to assess the thoughts and feelings of the actress on each of the three conditions. **Results:** There was a significant interaction between the experimental condition and ratings of emotions

described in the 3 conditions $F(2,120) = 7.512$, $P < 0.01$ and the ratings of the thoughts described in the 3 conditions $F(2,120) = 11.314$, $P < 0.001$. Interpersonal sensitivity was scored highest after face to face interaction, followed by listening to a phone call and the least by “WhatsApp”. Trait measure of interpersonal level of sensitivity of the participants has not affected the results. **Conclusions:** Similar to previous studies, the results indicate that communication by using text messages on smartphones impairs interpersonal sensitivity by missing emotional and non-verbal cues. Accordingly, individuals should be aware on the deleterious effects of the use of smartphones on inter-personal communication and sensitivity.

OP-05

Mindfulness-based interventions in the assessment, treatment and relapse prevention of compulsive sexual behaviors: Experiences from clinical practice

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Background and aims: Compulsive sexual behaviors include a range of sexual activities including excessive and problematic pornography use, disordered hypersexuality and sexual infidelity. Although many individuals and couples suffer from compulsive sexual behaviors, relatively

few seek treatment and empirically validated treatments are largely lacking. Tenets of Eastern philosophy have been incorporated into empirically validated treatments for stress reduction and other psychiatric and psychological concerns. However, their application to sexual health

is less well investigated. *Methods:* Through an Eastern-influenced Hakomi clinical training, a mindfulness-based approach to therapeutic interventions aimed at improving sexual, intimacy-oriented and relationship health has been developed and explored in clinical practice. Cases from clinical practice will be presented as a means to provide a basis for future direct clinical investigation into therapeutic approaches to help people suffering from the impact of compulsive sexual behaviors. *Results:* Cases from men, women and couples will be presented. Examples of how mindfulness-based interventions have helped individuals

reduce compulsive and addictive sexual behaviors and move towards and attain healthy sexual relationship functioning will be discussed. *Conclusions:* In clinical practice, mindfulness-based approaches resonate with a broad range of individuals and help people develop skills that assist in creating more connected and healthy patterns of sexual functioning. Future studies should examine directly in randomized clinical trials the efficacy and tolerability of mindfulness-based approaches for individuals and couples suffering from the impact of compulsive sexual behaviors.

OP-06

Development of the Gambling Quality of Life Scale (GQoLS):

A new patient-reported outcome measure to assess health-related quality of life in gambling disorder

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Background and aims: Health-related quality of life (QoL) instruments report a subjective perception of the impact of disease and treatment(s). In gambling disorder, the currently used QoL instruments are generic ones and do not necessarily explore the entire spectrum of patients' concerns. Our purpose was to develop a patient-focused rigorous «patient-reported outcome» QoL instrument specific to subjects with gambling disorders: the Gambling Quality of Life Scale (GQoLS). *Methods:* Focus groups were conducted with patients with gambling disorder. They were analyzed using ALCESTE software to identify key areas of impact of gambling disorder. Draft items were developed to capture these issues and underwent expert review to ensure clinical applicability. Cognitive debriefing interviews were conducted with gambling disorder patients to assess face and content

validity. *Results:* From focus groups conducted with 25 patients with gambling disorder, seven areas of impact emerged, forming the basis for the GQoLS: loneliness, living conditions, relationships, misunderstanding, preoccupation and wasting time, emotional impact and difficulties in asking for help. A pool of 87 items formed the initial instrument. Cognitive debriefings showed that items were relevant to gamblers' experience. Some items were removed, revised or combined because included gamblers felt they were unclear or redundant. *Discussion and Conclusions:* GQoLS is the only patient-centered measure of health-related QoL developed specifically for gambling disorder and offers the potential of increased sensitivity to show the effectiveness of therapeutic interventions from the patient's perspective.

OP-07

Cue-reactivity and craving in Internet-pornography-viewing disorder: Behavioral and neuroimaging findings

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Background and aims: Internet-pornography-viewing disorder (IPD) is considered one type of specific Internet-use disorders, but potentially shares some mechanisms with general hypersexual behavior. Cue-reactivity and craving are crucial concepts in both substance and behavioral addiction research. *Methods:* These concepts have been recently investigated in subjects with hypersexual behavior and in individuals with IPD. Studies addressing behavioral correlates of cue-reactivity and craving as well as results from neuroimaging investigations are summarized. *Results:*

Behavioral data support the theoretical hypothesis that cue-reactivity and craving are mechanisms underlying IPD. Behavioral data are complemented by functional neuroimaging findings, which suggest a contribution of the ventral striatum to the subjective feeling of craving. Cue-induced hypersensitivity of the ventral striatum and further brain areas, which are involved in reward anticipation and reward processing, can be considered an important brain correlate of IPD. *Conclusions:* The findings on cue-reactivity and craving in IPD are consistent with the recently suggest-

ed Interaction of Person–Affect–Cognition–Execution (I-PACE) model of specific Internet-use disorders. This model suggests that gratification and reinforcement learning contribute to the development of cue-reactivity and

craving when being confronted with specific stimuli, which makes it more likely that individuals develop a diminished control over their behavior. Specifications of the I-PACE model for IPD and hypersexual behavior are discussed.

OP-08

Factors influencing treatment-seeking behavior in female pathological gamblers

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Background and aims: Studies suggest that female pathological gamblers are underrepresented in professional treatment settings as well as self-help groups, even though epidemiological data point out that gambling problems among women have increased in recent years. This is surprising, since women with substance-related addiction usually are more likely to ask for professional help compared to their male counterparts. Thus, we sought to examine the motives that may prevent female gamblers from seeking help. **Methods:** For this purpose, demographic and clinical data of treatment-seeking gamblers from Austria (Medical University of Vienna, Gambling Helpline n = 179, 12.3% female) and Germany (“Hamburger Basisdatendokumentation”; standardized documentation of help centres; n = 599,

12.4% female) were retrospectively examined. **Results:** Our study revealed major barriers for seeking professional help for female pathological gamblers; among them practical issues such as inadequate insurance, poverty and lack of childcare offers, emotional factors such as feelings of guilt and shame due to stigmatization, and structural shortcomings such as lack of social support from family, friends and the workplace, and the difficulty of finding appropriate treatment services for this highly vulnerable patient group. **Conclusions:** Evidently, the experience of gambling and related problems is influenced by gender differences and targeting at-risk and problem gamblers without considering gender-specific effects will have limited success for treatment interventions and prevention.

OP-09

Trajectories of gambling behaviour and gambling problems in outpatient care – Results from an ongoing study

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Background and aims: In recent years, the number of gamblers seeking treatment is increasing in Germany (Braun et al. 2013, 2016; Meyer 2016). The demand for outpatient treatment is much higher than for inpatient treatment. However, little is known concerning the trajectories of gambling problems in gamblers seeking outpatient care. This study addresses this gap by analysing temporal changes in gambling behaviour and gambling problems using data from baseline (treatment initiation), 6-month and 12-month follow-up assessment. **Methods:** Analyses are based on data from the *Follow-up Study – Outpatient care of patients with gambling problems*, a naturalistic study on the long-term development of gamblers seeking treatment. The sample consists of n = 156 patients of 24 outpatient treatment centres in Bavaria, Germany. Follow-up data are still being collected, so far n = 102 patients participated at 6-month

follow-up and n = 54 at 12-month follow-up. Longitudinal data analyses will be conducted to investigate temporal changes in gambling behaviour and gambling problems, e.g. time spent with gambling or fulfilled number of DSM-5 criteria. **Results:** At Baseline, about 88% of participants were male and mean age was 36 years. The criteria for gambling disorder (DSM-5) were fulfilled by 98% of patients. About two thirds of patients preferred gambling on slot machines in street casinos and bars. Furthermore, 15% preferred online gambling and 11% preferred sport bets on- or offline, respectively. Preliminary results of longitudinal analyses will be presented. **Conclusions:** The results will be discussed along with study design, methodology and international study results. Conclusions about the trajectories of gambling problems in a treatment seeking sample will be drawn.

OP-10

Youth problem gambling: A cross-cultural study between Portuguese and English youth

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Background and aims: In spite of age prohibitions, most research suggests that a large proportion of adolescents engage in gambling, with a rate of problem gambling significantly higher than adults. There is some evidence suggesting that there are some cultural variables that might explain the development of gambling behaviours among this age group. However, cross-cultural studies on this field are generally lacking. This study aimed to test a model in which individual and family variables are integrated into a single perspective as predictors of youth gambling behaviour, in two different contexts (i.e., Portugal and England). **Methods:** A total of 1,137 adolescents and young adults (552 Portuguese and 585 English) were surveyed on the measures of problem gambling, gambling frequency, sensa-

tion seeking, parental attachment, and cognitive distortions. **Results:** The results of this study revealed that in both Portuguese and English youth, the most played gambling activities were scratch cards, sports betting, and lotteries. With regard to problem gambling prevalence, English youth showed a higher prevalence of problem gambling. The findings of this study also revealed that sensation seeking was a common predictor in both samples. However, there were some differences on the other predictors between the two samples. **Conclusions:** The findings of this study suggest that youth problem gambling and its risk factors appear to be influenced by the cultural context and highlights the need to conduct more cross-cultural studies on this field.

OP-11

Beliefs and Opinions of Social and Health Care Professionals with Respect to Problem Gambling

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Background and aims: Social and health care professionals have a central role in early detection, providing treatment and referring individuals suffering from problematic gambling. However, problem gambling is still a hidden addiction within social and health care settings in Finland, thus leaving an easily unrecognized/unidentified problem causing further distress to a person's and their significant others' life in a multitude of ways. Currently, information about problematic gambling and related issues are not systematically included in social and health care professionals' educational programs in Finland. **Methods:** The current study aims at exploring social and health care professionals' opinions and beliefs in respect to problem gambling in the clinical setting. Moreover, professionals' perception and knowledge, and willingness for continuing education about problem gambling were inquired. A total of 729 professionals: medical doctors (n = 102), medical doctors specialized in addictive disorders (n = 40), social workers (n = 505) and nurses (n = 82) responded to an online survey. **Results:** 70.2% of the respondents perceived problematic gambling as a serious problem in Finland. 78.2% had seen a person with a gambling problem during the past year. Problem gambling was identified as being a

secondary problem co-existing with mental health or with another addiction. Social workers were the most active group of professionals in screening possible problematic gambling. Of all the respondents, 70.0% perceived that their training did not provide them with adequate information about problem gambling, and 52.3% of the respondents considered their current knowledge about problem gambling and related issues inadequate. Professionals expressed their interest in continuing education: 48.0% about identification and 21.0% treatment of problem gambling, and 13.9% desired information about where to refer a person with gambling problems. **Conclusions:** Current education and training of social and health care professionals does not give adequate knowledge about problem gambling and related issues and their treatment. The majority of professionals felt that their current knowledge of problem gambling and related issues is still limited. Professionals endorsed an interest in receiving continuing education. These preliminary results emphasize the importance of more efforts in increasing awareness regarding problematic gambling and related issues, and the demand for better continuing education training on gambling problems in Finland.

OP-12

Technology addiction: A behavioral addiction?

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Problematic internet use, also known variably as internet addiction or compulsive internet use, is common and has been associated with multiple untoward functional outcomes. Its validity as a mental disorder, relationship with other mental disorders, and associated neurocognitive functioning, has received little attention. Problematic internet use may constitute a meaningful mental disorder, in that it is associated with quality of life impairment, various psychiatric morbidities, and select cognitive impairment. Problematic internet use also appears strongly related to

problem gambling and ADHD symptomatology in a dimensional sense, informing the debate about its optimal nosological classification status. This presentation will discuss recent research that examined adults with internet addiction and the relative contribution of addictive-related, impulsive-related, and compulsive-related measures. Because this problematic behavior is not currently codified as a mental health disorder, research in this area may inform future nosological understandings of behavioral addiction.

OP-13

Does gratitude promote recovery from substance misuse?

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Background and aims: The emergence of the recovery movement represents a profound shift in the field of addiction from a focus on negative life events and a pathology-oriented framework to a strengths-based approach and long-term recovery-oriented framework. The implicit focus is on moving beyond the reduction of addiction-related pathology to the creation of personal, family, and community “recovery capital.” Recovery capital denotes the quantity and quality of internal and external resources that enable an individual to initiate and sustain long-term addiction recovery. The prospects for successful recovery are dependent on personal and social resources including character traits and attitudes (e.g., hope, confidence, and gratitude), material resources (clothing, food, and shelter), and relationships (social bonds). This paper explores the role of gratitude as a central ingredient of recovery capital in the process of recovery from substance misuse and suggests that: (a) gratitude can serve to build individual recovery capital in order to overcome substance misuse and to enhance psychological and social functioning and (b) the practice of gratitude is used by the Narcotic Anonymous (NA) and Alcoholic Anonymous (AA) programs enhance

members’ long-term recovery. Gratitude has been empirically proved as a valuable positive emotion and attitude, building lasting and beneficial personal and social resources and helping to maintain interpersonal relationships, improve quality of life, and promote more adaptive coping strategies rather than resorting to negative strategies such as substance misuse. Gratitude enables the individual to develop the personal arsenal of strengths necessary to conduct a sober and productive life. *Methods:* This article reviews the previous literature and the empirical research on gratitude and on recovery capital as a multi-dimensional construct. In addition, this research primarily relies on a content analysis of gratitude practice by members in NA and AA. *Results:* The NA program has adopted gratitude as a key component of recovery and urges members to practice gratitude on a daily basis on their journey toward successful recovery. *Conclusions:* This article represents a first step in examining the role of gratitude as recovery capital in the process of long-term recovery. The results may be helpful for developing treatment that incorporates gratitude-based intervention that initiates and sustains long-term recovery.

OP-14

Factors associated with adolescents’ smartphone addiction in accordance with household income type

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Background and aims: The roles of parents have a crucial impact on children’s use of digital equipments such as smartphones (Subramanyam, 2011). We suspect that the parenting roles, such as parenting time and style, would be affected by types of household income, namely, dual-in-

come or single-income. Therefore, we investigate how the factors that affect smartphone addiction differs between the types of household income. *Methods:* National Information Society Agency of Korea performed a survey on adolescents’ smartphone usage patterns along with psychological

factors, family and parenting styles, school life, and leisure activities (N = 711, age = 13). We partitioned the cases into two groups based on their family income types. The dual-income family group (N = 389) has 157 addiction cases and the single income family group (N = 322) has 93 such cases. We conducted multiple t-tests to find out factors that are associated with the smartphone addiction within each group. *Results:* The tendency of heavy parental interference, lack of goals, and an increase in aggressiveness was observed in both groups regardless of household income type. For the dual-income family group, the smartphone addiction showed significant relationships with parents' dicta-

torial and non-democratic parenting attitude, low learning motivation, school stress and interpersonal relationships. On the other hand, for the single-income family group, a different set of factors including depression, anxiety, relative deprivation, interest and appreciation were observed to be correlated with the smartphone addiction. *Conclusions:* Each form of household income is associated with different factors in adolescents' smartphone addiction, and these factors can be used as a basis for providing appropriate interventions. *Acknowledgement:* NRF Korea, Ministry of Science, ICT & Future Planning (2015M3C7A1065859, 2015M3C7A1065844).

OP-15

Using interference-based intervention to block gambling craving: A proof of principle study

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Background and aims: Gambling disorder is a well-established behavioral addiction, which has been aligned to substance-related addictions in the DSM-5. While craving is recognized as a criterion for substance related addictions, it was not to date retained for gambling disorder, despite a growing body of research emphasizes its importance. The Elaborated Intrusion Theory posits craving (and desire) as the result of an elaboration process where “desires thoughts” (mental images and thoughts) require attentional and cognitive resources. Recent research supports the development of interference-based intervention, which consists in using a competing task that monopolizes the cognitive resources underlying craving, thus preventing its elaboration and maintain. The aim of this study is to test this technique in the framework of gambling craving. *Meth-*

ods: The study was conducted in recreational gamblers (at least once a month). In two conditions (19 gamblers per condition), gambling craving was first induced via a short mental imagery session and a computer-generated gambling simulation task. Then, the experimental group was asked to perform an interference task consisting of creating a vivid mental image of a bunch of keys. The control group completed a task in which they had to pop and count bubble wrap. *Results:* The analyses revealed that induced craving decreases significantly in both groups. However, participants that are considered problem gamblers showed a greater decrease of their craving in the experimental condition. *Conclusions:* This “proof of principle” study supports that interference-based techniques are potentially promising interventions to reduce craving in problem gambling.

OP-16

Can game transfer phenomena contribute to the understanding of the psychophysiological mechanisms of gaming disorder? A comparison of visual intrusions induced by videogames and mental disorders

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Background and aims: Visual intrusions are core symptoms of various mental disorders (e.g. Schizophrenia, PTSD, Hallucinogen Persisting Perception Disorder) and can also be side-effects of the use of psychoactive substances. Gamers have reported sensorial intrusions in studies on Game Transfer Phenomena (i.e. altered perceptions, automatic mental processes and behaviours with game content) including seeing videogame images and perceiving distorted environments. This paper aims to compare visual intrusions reported by gamers with those associated with psychoactive substances and mental disorders. *Methods:* A qualitative analysis of gamers' visual

experiences extracted from over 2,000 participants was compared with results from a literature review of visual disturbances associated with psychoactive substances and mental disorders. *Results:* Besides etiological differences relevant for establishing differential diagnosis, a preliminary analysis suggests phenomenological similarities between visual intrusions in videogames, mental disorders and side-effects of the use of psychoactive substances. These include: (i) type of experiences (e.g., colourful flashes, afterimages, hallucinations, halos around objects, intensified colours), (ii) circumstance of manifestations/triggers (e.g. darkness, fatigue), (iii) appraisals (e.g., dis-

tressful, enjoyable) and, (iv) duration (e.g., short, recurrent, lasting days or longer). *Conclusions:* The similarities between gamers' visual experiences and visual intrusions in mental disorders and chemical intoxications posit the following questions: (i) what role does the dysregulation of dopamine transmission and the modulation of serotonin

play in visual intrusions from videogames?, (ii) are recurrent visual intrusions symptoms that should be considered among the diagnostic criteria for Gaming Disorder? To conclude, videogames provide a new platform to investigate visual intrusions – a phenomenon that is still poorly understood.

OP-17

Shape and size – An exploration of both intended and unintended consequences and responses of gambling within a diverse society with reference to South African women

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This paper will reflect on the impact of regulated, unregulated and illegal gambling on South African women. It would further consider the incidence of informal and social unregulated gambling and the influence and participation of women and the challenges linked to these. Although gambling was perceived as an answer for the economic challenges of the newly democratic state of South Africa in 1994, many of the unintended consequences were not factored in the potential economic benefit for the country. Some of these unintended consequences are the impact of gambling on female households, female gamblers as well as gambling related problems. Some of these specific challenges facing women are gambling addiction and the impact of the problems of gambling on families and society at large and the treatment of these with women in particular. The South African gambling sector is very diverse both geographically, and also with

specific emphasis on urban, peri urban and rural areas. It also reflects the different educational and age strata of the society linked further to a wide disparity of income distribution also and its impact on women. The modes of gambling in these diverse areas are also differently practiced in different geographic areas and the wide range of socio economic terrains. Townships and cities and metropolitan areas would have different emphasis on different modes, even though the legislative environment is uniform across the country. Some modes are deemed outside of the legal framework, yet still have consequences for women as a vulnerable group, and often impacts the urban poor, the rural and less educated severely. This paper will reflect on the diversity of gambling and its impact on South African women, the impact of different modes on women as well as the treatment and opportunities for women in the midst of this diversity.

OP-18

Reaction time and inhibitory control: comparison in various video game genres (FPS, MOBA, MMORPG)

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Background and aims: Nowadays, online gaming includes tens of millions of regular gamers, thus becoming a major leisure activity. Studies conducted in the framework of video gaming mainly focused on its problematic use or on their potential in terms of cognitive functions improvement. Only few studies considered the influence of structural characteristics (i.e., the intrinsic mechanisms and features) which can differentiate game genres. To test the effect of the game genre on cognitive functions, gamers from three popular online video game genres (MMORPG, MOBA, and online FPS) were compared regarding reaction time and inhibitory control. *Method:* 81 regular online gamers playing either MMORPG, MOBA, or online FPS were recruited. They performed the Hybrid-Stop Task that allows assessment of reaction time and two distinct inhibition processes: (1) restraint (i.e., preventing a prepotent response) and (2) cancellation (i.e., interrupting an ongoing automatized action). They also completed self-reported

questionnaires measuring involvement in online games, impulsivity traits, and comorbid depressive symptoms. *Results:* After controlling for the time spent playing weekly as well as “overuse” and “conflicts with relatives” symptoms, online FPS gamers displayed faster reaction times compared to the other players. However, they also displayed compromised inhibitory control, as reflected by impaired ability to restrain an ongoing motor response when compared to other players. No evidence of group difference was found regarding the cancellation process. *Discussion:* Compared to MMORPG and MOBA gamers, online FPS gamers benefit from higher speed reactivity. They however have compromised inhibitory control, making them a potential “at risk” population for displaying addictive and/or risky behaviors. *Conclusions:* Further studies should consider the structural characteristics of video games on their potential specific cognitive and neuroadaptive impacts.

OP-19

**Reward Deficiency Syndrome Questionnaire (RDSQ):
A new tool to assess the psychological features of reward deficiency**

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‘Reward Deficiency Syndrome’ (RDS) is a theory assuming that specific individuals do not reach a satisfactory state of reward due to the functioning of their hypodopaminergic reward system. For this reason, these people search for further rewarding stimuli in order to stimulate their central reward system (i.e., extreme sports, hypersexuality, substance use and/or other addictive behaviors such as gambling, gaming, etc.). Beside the growing genetic and neurobiological evidence regarding the existence of RDS little research has been done over the past two decades on the psychological processes behind this phenomenon. The aim of the present paper is to provide a psychological description

of RDS as well as to present the development of the Reward Deficiency Syndrome Questionnaire (developed using a sample of 1,726 participants), a new four-factor instrument assessing the different aspects of reward deficiency. The results indicate that four specific factors contribute to RDS comprise “*lack of satisfaction*”, “*risk seeking behaviors*”, “*need for being in action*”, and “*search for overstimulation*”. The paper also provides psychological evidence of the association between reward deficiency and addictive disorders. The findings demonstrate that the concept of RDS provides a meaningful and theoretical useful context to the understanding of behavioral addictions.

OP-20

**Ten-Item Internet Gaming Disorder Test (IGDT-10):
Psychometric properties across seven language-based samples**

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Background and aims: The Ten-Item Internet Gaming Disorder Test (IGDT-10) is a brief instrument developed to assess Internet Gaming Disorder as proposed in the DSM-5. The first psychometric analyses carried out among a large sample of Hungarian online gamers demonstrated that the IGDT-10 is a valid and reliable instrument. The present study aimed to test the psychometric properties in a large cross-cultural sample. *Methods:* Data were collected among Hungarian (n = 5222), Iranian (n = 791), Norwegian (n = 195), Czech (n = 503), Peruvian (n = 804), French-speaking (n = 425) and English-speaking (n = 769) online gamers through gaming-related websites and gaming-related social networking site groups. *Results:* Confirmatory factor analysis was applied to test the dimensionality of the IGDT-10. Results showed

that the theoretically chosen one-factor structure yielded appropriate fit to the data in all language-based subsamples. In addition, results indicated measurement invariance across all language-based subgroups and across gender in the total sample. Reliability indicators (i.e., Cronbach’s alpha, Guttman’s Lambda-2, and composite reliability) were acceptable in all subgroups. The IGDT-10 had a strong positive association with the Problematic Online Gaming Questionnaire and was positively and moderately related to psychopathological symptoms, impulsivity and weekly game time supporting the construct validity of the instrument. *Conclusions:* Due to its satisfactory psychometric characteristics, the IGDT-10 appears to be an adequate tool for the assessment of internet gaming disorder as proposed in the DSM-5.

OP-21

The joint role of impulsivity and distorted cognitions in gambling: a cluster analytic approach

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Background and aims: Two main types of psychological factors have been relied to the development and maintenance of problem gambling (PG), namely (1) impulsivity traits and (2) cognitive distortions. To date, these two constructs have been explored separately, and their joint role in PG has received little attention. Moreover, growing evidence suggests that PG should be clustered into distinct subgroups based on the heterogeneity of its manifestations (Blaszczynski & Nower, 2002). The goal of the current study is thus to identify subgroups of gamblers based on impulsivity traits and cognitive distortions. **Methods:** Gamblers from the community ($N = 709$) and treatment-seeking pathological gamblers ($N = 122$) completed the UPPS-P

Impulsive Behavior Scale, the Gambling-Related Cognitions Scale, and the Canadian Problem Gambling Index. Sociodemographic variables as well as gambling habits and preferences were also measured. **Results:** Three problematic clusters were identified, which together include almost all treatment-seeking pathological gamblers. These clusters correspond to (1) emotionally vulnerable and impulsive gamblers, (2) impulsive gamblers, and (3) gamblers characterized by both impulsive traits and cognitive distortions. **Conclusions:** PG appears to rely on the interaction between different types of psychological factors. Furthermore, the diversity of psychological profiles showed supports the development of personalized interventions.

OP-22

Adolescent hypersexuality: Is it a distinct disorder?

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Background and aims: Adolescent hypersexuality, and its position within personality dispositions, is the subject of this presentation. The personality dispositions examined were attachment style, temperament, gender, religiosity, and psychopathology. **Methods:** To do so, 311 high-school adolescents (184 boys, 127 girls) between the ages 16–18 ($M = 16.94$, $SD = .65$), enrolled in the eleventh ($n = 135$, 43.4%) and twelfth ($n = 176$, 56.6%) grades, most of whom (95.8%) were native Israelis. By religiosity, 22.2% defined themselves as secular, 77.8% reported various degrees of religiosity. Five possible empirical models were examined, all based on current theory and research on hypersexuality.

Results and Conclusions: The fourth model was found to be compatible with the data, indicating that psychopathology and hypersexuality are independent disorders and are not related by a mediating process. In addition, religiosity and gender are predictors, but the relationship between temperament and attachment is independent of them – the process is identical in religious and non-religious adolescents, both boy and girl. Additionally, the hormone oxytocin may be related to hypersexuality, with implications that could affect the therapeutic meaning of understanding the location of adolescent hypersexuality as a disorder in and of itself.

OP-23

Addiction to body modification as a behavior addiction

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Background and Aims: Skin picking addiction has been included into classification of behavioral addictions (Demetrovics & Griffiths, 2012). **Methods:** We have introduced the classification of behavior addictions with five sections: (1) pathological gambling; (2) erotic addictions;

(3) socially acceptable addictions; (4) technological addictions; (5) food addictions. Body modification is the permanent or semi-permanent deliberate altering of the human body for non-medical reasons. Though the popularity of body modification is increasing, the psychosocial

data about practitioners of body piercing and tattooing are few and controversial. In some cases the repeated body modification becomes uncontrollable and interferes negatively with life responsibilities, health and interpersonal relationships. *Results:* Body modifications may be classified as “Reversible”: wearing unusual clothes and jewelry, colouring of the body (make-up, body art), manipulation with the hair, beard, moustaches and nails, weight change, and “Irreversible”: decorating skin with tattoos, scarification, implantation of foreign objects (microdermal and/or transdermal implantation), piercing, operational modifications of the teeth, tongue, genitals, fingers and toes until the desire for amputation, suspension, repeated

cosmetic surgery. The leading motive of body modifications is to get pleasure from the individually produced changes, which are partly connected with the sexual desire and relationship with partner. Anomalous body modification may be classified as a behavioural addiction (among socially acceptable addiction section up to our classification) because of obsessive-compulsive craving with inability to correct which is based not only on social circumstances but on personality characteristics. Moreover, risk factors as well as clinical criteria of body modification are similar to other addictive disorders. *Conclusions:* Further investigations are needed to elucidate the definition of the body modification addiction.

OP-24

Drugs, Alcohol & Behavioral addictions – Developing and implementing a comprehensive policy

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Israel Anti-Drug Authority (IADA) is a statutory body charged with formulating all drug and alcohol policy in Israel and integrating the work of the various ministries. The work covers all areas related to the use of drugs and alcohol, such as prevention, treatment and rehabilitation, law enforcement, research and increasing knowledge, training professionals and volunteers and raising public awareness. Non substance addiction many times goes side by side with substance addiction, forcing us to learn, understand and give special attention to this situation. Acknowledging, address-

ing and understanding the relationship between substance and non-substance addiction will help us to find the right intervention. Coherent policy bridges between different addictions, including substances and behavior, in three levels:

1. Substance use and addiction are controlled by the brain
2. Substance use influences mental and physical health
3. Genetic predisposition

Implementation of a coherent policy is based on 4 pillars: prevention, treatment and rehabilitation, harm reduction and supply reduction.

OP-25

Compulsive buying behavior: Characteristics of comorbidity with gambling disorder

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Background and aims: Compulsive buying behavior (CBB) has begun to be recognized as a condition worthy of attention by clinicians and researchers. Studies on the commonalities between CBB and other behavioral addictions such as gambling disorder (GD) exist in the literature, but additional research is needed to assess the frequency and clinical relevance of the comorbidity of CBB and GD. The aim of the study was to estimate the point-prevalence of CBB + GD in a clinical setting. *Methods:* Data corresponded to $n = 3,221$ treatment-seeking patients who met criteria for CBB or GD at a public hospital unit specialized in treating behavioral addictions. Three groups were compared: only-CBB ($n = 127$), only-GD ($n = 3,118$) and comorbid CBB + GD ($n = 24$). *Results:* Prevalence for the co-occurrence of CBB + GD was 0.75%. In the stratum of patients with GD, GD + CBB comorbidity obtained relatively low point prev-

alence (0.77%), while in the subsample of CBB patients the estimated prevalence of comorbid GD was relatively high (18.9%). CBB + GD comorbidity was characterized by lower prevalence of single patients, higher risk of other behavioral addictions (sex, gaming or internet), older age and age of onset. CBB + GD registered a higher proportion of women compared to only-GD (37.5% vs. 10.0%) but a higher proportion of men compared to only-CBB (62.5% vs. 24.4%). Compared to only-GD patients, the simultaneous presence of CBB + GD was associated with increased psychopathology and dysfunctional levels of harm avoidance. *Discussion and Conclusions:* This study provides empirical evidence to better understand CBB, GD and their co-occurrence. Future research should help delineate the processes through which people acquire and develop this comorbidity.

OP-26

Food addiction in bulimia nervosa: Clinical correlates and association with response to a Brief Psychoeducational Intervention

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Background: Food addiction (FA) has been examined in different populations. Although high FA levels are associated with greater eating-disorder severity, few studies have addressed how FA relates to treatment outcome. **Aims:** (1) to determine whether a brief intervention for bulimia nervosa (BN) reduces FA diagnosis or severity compared to baseline; and (2) to determine if FA is predictive of treatment outcome. **Methods:** 66 female BN patients participated in the study. The Yale Food Addiction Scale was administered at two time points: prior to- and

following a 6-week intervention. The number of weekly bingeing/purging episodes, dropout and abstinence from bulimic behavior were used as primary outcome measures. **Results:** This brief intervention reduced FA severity and FA diagnosis in the 55 patients who completed treatment. FA severity was a short-term predictor of abstinence from bingeing/purging episodes after treatment ($p = .018$). **Conclusions:** FA appears to be prevalent in BN although FA severity can improve following a short-term intervention.

OP-27

Investigating the psychometric properties of a scale assessing Internet Gaming Disorder

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Background: Video game addiction was recently included as a condition for further study in the fifth and latest version of the Diagnostic and Statistical Manual of Mental Disorders denoted as "Internet Gaming Disorder (IGD)". This study investigated the psychometric properties of a scale assessing IGD. **Methods:** Data was collected from a sample of adolescents aged 17.5 years, in 2012 and 2014 ($N = 1258$). Logistic regression and binomial regression was applied in order to see how different predictors of mental health were associated with video game addiction. Correlation analysis was conducted between IGD and Gaming Addiction Scale for Adolescents (GASA). The study further used Mokken scale analysis to investigate whether the score of the different items on the IGD scale

measured a single latent variable. **Results:** Logistic regression analysis showed that gender and depression was significant predictors of being an addicted gamer, while results from the negative binomial regression analysis showed that gender, depression, aggression and loneliness were significant predictors of IGD. The correlation analysis showed a positive correlation between IGD and GASA ($r = 0.6$, $p < .01$). The Mokken scale analysis found that all item-coefficients of homogeneity exceeded 0.3, indicating that these items measure a single latent variable. **Conclusions:** The results from the regression analysis, correlation analysis and Mokken scale analysis supports the notion that the Internet Gaming Disorder scale are a valid and a unidimensional measure of video game addiction.

OP-28

Toward an in-depth understanding of binge-watching behavior: a qualitative approach with focus group

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Background and aims: Binge-watching (i.e., seeing multiple episodes of the same TV series in a row) now constitutes a widespread phenomenon, potentially leading to excessive involvement and adverse consequences for some individuals. However, little is known about the psychological factors underlying this habit, as reflected by the paucity of available studies, most of them merely applying the classical criteria used for other addictive disorders without exploring the specificity and uniqueness of binge-watching. The present study thus aims at making a first step toward a genuine understanding of binge-watching behavior, through a qualitative analysis of its phenomenology. **Methods:** A focus group (N = 7) was settled at the Université catholique de Louvain with people usually watching TV series. Questions explored included a wide range of aspects related to binge-watching, like the various motives involved, viewing practices and related behaviors. **Results:** A thematic content analysis allowed the identification of the unique features of binge-watching behavior. Centrally,

while most participants acknowledged that TV series watching can be potentially addictive and likely to become problematic, they all agreed having trouble recognizing themselves as “addict”. Indeed, even though some meaningful connections could be established with substance addiction criteria, such parallelism appeared insufficient as numerous distinctive facets emerged including a set of unique behaviors focusing around TV series watching. **Conclusions:** Relying extensively to the addiction model to account for binge-watching could thus lead to miss a genuine approach to the topic by leaving aside its specificities. Beyond binge-watching, there is a strong need for more qualitative studies to examine excessive manifestations of everyday behaviors or leisure activities which have been a priori proposed as reflecting addictive disorders. Indeed, approaching their unique phenomenology and symptomatology is required to generate the first steps of an adequate theoretical rationale to understand these emerging problematic behaviors.

OP-29

The Good Mother Myth as perceived by Israeli women with a gambling disorder

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The Good Mother Myth is thought to be one of the key social constructions in Western society. The ideal mother will, if necessary, totally sacrifice her own needs to care for her children in a gesture of unconditional love. When this myth is applied to the mothering by women of marginalized groups such as those who have been convicted of crimes or diagnosed as addicts it leads to much greater and unforgiv-

ing scrutiny. This qualitative interview-based study examined 13 Israeli women with a gambling disorder and found that these women make considerable efforts to present their maternal function and construct their maternal identity as adhering to the Good Mother Myth. Practical recommendations to researchers and clinicians concerning the motherhood of women gamblers are put forward.

OP-30

Self-Stigma in Individuals with Gambling Problems: Comparisons to People with Alcohol and other Substance Use Problems

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Background and aims: As in other mental health disorders, a gambling disorder tends to be stigmatized by the public. However, this process does not stop with those who are stigmatized. People with gambling problems (GP) who are exposed to public stereotypes may internalize and apply them to themselves through a mechanism known as self-stigma. Using the Corrigan, Watson and Barr (2006) pro-

gressive model for self-stigma which has four sequential stages (awareness of the stigma, agreement with the stigma, self-concurrence, and self-esteem decrement) this study explored differences in self-stigma between individuals with GP and individuals with alcohol and other substance use problems at each stage, as well as the evolution in self-stigma across the 4 stages. **Methods:** 37 individuals

with GP, 60 with alcohol problems and 51 with drug problems who applied for treatment in rehabilitation centers in Israel in 2015-2016 were recruited. *Results:* The results showed that the gambling group only differed from the other groups for the first stage. No differences were found between the 3 groups in terms of the progression from one self-stigma stage to another. *Conclusions:* Individuals with GP differ from individuals with alcohol and other sub-

stance use problems in the awareness stage (realization of the existence of public stigma). This may suggest that the public stigmatizes gambling disorder less than other addictive disorders. However the lack of differences between the groups for the other 3 stages, and across groups as regards the progression of the self-stigma stages suggest a similar internalization process for individuals with addictive disorders.

OP-31

Altered orbitofrontal reactivity during reward processing among problematic pornography users and pathological gamblers

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Background and aims: Frequent pornography use is highly relevant among young males (Hald, 2006). For majority, pornography viewing is a form of entertainment, but for some individuals problematic pornography use (PPU) accompanied by excessive masturbation is a reason for treatment seeking (Gola et al., 2016). What differentiate problematic and regular pornography users? And how does it mimic other problematic behaviors, such as e.g. pathological gambling? *Methods:* Using fMRI methodology we examined brain reactivity towards erotic and monetary stimuli, disentangling cue-related 'wanting' from reward-related 'liking' among 28 heterosexual males seeking treatment for PPU and 24 matched controls (Gola et al., 2016). The same procedure had been used previously in studies on pathological gambling (Sescousse et al., 2013). *Results:* As we showed before (Gola et al., 2016) compared with control subjects, PPU subjects showed increased activation of brain reward circuits (ventral striatum) specifically for cues predicting erotic pictures but not for cues predicting monetary gains, which exactly mimics results of previous study with the same method on individuals with gambling disorder (Sescousse, et al., 2013). Here we focused on other brain region involved in reward processing – orbitofron-

tal cortex (OFC). As it had been shown, evolutionally older posterior OFC in healthy subjects is involved in processing of primary rewards (food and sex), while anterior OFC process secondary rewards (such as money or social reinforces). According to this state of art aOFC is in our study it was the only ROI expressing higher activations for monetary gains than erotic rewards in control subjects. But interestingly, for PPU subjects the aOFC was more active for erotic pictures than monetary rewards, while pOFC remained unchanged. The amount of this shift in aOFC was related to PPU severity measures. Among subjects with pathological gambling opposite pattern of changes was observed: pOFC was activated more for monetary rewards, while aOFC activations remained unchanged when compared to controls (Sescousse et al., 2013). *Conclusions:* Our results suggest that PPU subjects may experience difficulties in differentiating between value of erotic and non-erotic rewards similarly to pathological gamblers in case of monetary and non-monetary rewards. Our results show also that PPU resembles neural and behavioral patterns well-described in gambling disorder although functional changes affects opposite brain structures in both groups.

OP-32

Trans-Diagnostic Look at Behavioral Addictions: Clinical Impact and Presentation

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Background and aims: When discussing addictions, emphasis usually focuses on the lack of control over substances such as alcohol or illegal drugs. For many individuals,

however, this type of addictive behavior manifests as a behavioral addiction, and includes problems with gambling, sex, food, hair-pulling, technology, and skin-picking. While

these behaviors do not rely on the ingestion of an exogenous chemical, they nevertheless are associated with significant deleterious consequences, similar to those seen in substance use disorders. *Methods:* In this symposium we address current research related to several of these behavioral addictions, emphasizing the areas of clinical presentation, neurocognition and neurobiology, pharmacological treatments, and associations with other disorders. *Results:* Samuel Chamberlain (Cambridge University) will discuss current research on new technology addiction, discussing the role of this disorder in the digital age and current clinical understanding. Eric Leppink (University of Chicago)

will present research on impulsivity and compulsivity in hypersexual behavior, emphasizing neurocognitive and neurobiological findings related to this behavior. Sarah Redden (University of Chicago) will present data regarding trichotillomania and skin picking and their relationships to behavioral addictions. Finally, Gustavo Medeiros (University of Sao Paulo) will discuss the cultural presentations of gambling disorder, presenting clinical findings from the United States and Brazil. *Conclusions:* Jon Grant (University of Chicago) will chair this symposium and discuss the above talks in the context of where the field of behavioral addictions is moving.

OP-33

Neuromodulation of inhibitory control networks for impulsive-compulsive disorders

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Background and Aims: Neuromodulation represents a network pathway-oriented treatment and investigational tool that could be considered as a promising tool in the achievement of “precision medicine” and as a RDoC-based approach to several psychiatric disorders, including impulsive-compulsive disorders such as OCD and related disorders. Recent meta-analyses show that rTMS targeting the pre-Supplementary Motor Area (pre-SMA) seems to be a promising treatment for resistant OCD. *Methods:* The pre-SMA is a central node of inhibitory control networks and therefore it plays a central role in motor response inhibition and performance monitoring networks. Dysfunctional in-

hibitory control during response inhibition and increased error monitoring and sensitivity represent two core endophenotypes of OCD extensively replicated in the last years. *Results:* Thus, the mechanism of action of rTMS over the pre-SMA in OCD could be linked to the modulation of inhibitory response and error sensitivity. *Conclusions:* Moreover, other stimulation techniques, such as theta burst stimulation (TBS) or transcranial direct current stimulation (tDCS), could be useful as investigational tools in order to further clarify the role of the pre-SMA during several cognitive task in healthy controls and OCD patients.

OP-34

Trajectories of gambling behaviour and gambling problems in outpatient care – Results from an ongoing study

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Background and aims: In recent years, the number of gamblers seeking treatment is increasing in Germany (Braun et al. 2013, 2016; Meyer 2016). The demand for outpatient treatment is much higher than for inpatient treatment. However, little is known concerning the trajectories of gambling problems in gamblers seeking outpatient care. This study addresses this gap by analysing temporal changes in gambling behaviour and gambling problems using data from baseline (treatment initiation), 6-month and 12-month follow-up assessment. *Methods:* Analyses are based on data from the *Follow-up Study – Outpatient care of patients with gambling problems*, a naturalistic study on the long-term development of gamblers seeking treatment. The sample consists of n = 156 patients of 24 outpatient treatment centres in Bavaria, Germany. Follow-up data are still being collected, so far n = 102 patients participated at 6-month

follow-up and n = 54 at 12-month follow-up. Longitudinal data analyses will be conducted to investigate temporal changes in gambling behaviour and gambling problems, e.g. time spent with gambling or fulfilled number of DSM-5 criteria. *Results:* At Baseline, about 88% of participants were male and mean age was 36 years. The criteria for gambling disorder (DSM-5) were fulfilled by 98% of patients. About two thirds of patients preferred gambling on slot machines in street casinos and bars. Furthermore, 15% preferred online gambling and 11% preferred sport bets on- or offline, respectively. Preliminary results of longitudinal analyses will be presented. *Conclusions:* The results will be discussed along with study design, methodology and international study results. Conclusions about the trajectories of gambling problems in a treatment seeking sample will be drawn.

OP-35

Multiple substances and behavioral addictions among the hard-to-reach population in the 'largest open drug scene' in Israel.

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Background and objective: Limited attention has been given to research of the 'largest open drug scene' in Israel, located in the Old Central Bus Station in the city of Tel Aviv (OCBS-TA). This area is considered to be the "lowest place on Israeli society totem pole", and is populated by the most marginalized and hard-to-reach population, among of whom are injecting drug users, prostitutes, homeless, undocumented migrants from Africa, and others. Our goal in this study is to present the worldviews and the opinions of a range of marginalized people that live in this area, whose voices are missing from the public health and social discourse. *Method:* We conducted an ethnographic fieldwork (observations during the day and during the night) as well as 62 qualitative "informal interviews" with representatives from said population in OCBS-TA. Data was collected for three years, between July 2010 and December 2013. *Results:* We found that the 'hard-to-reach

population' that gathers in the OCBS-TA, has Multiple-Addictions for Polysubstance and behavioral addictions. They are addicted to the action - the eccentric, and criminal activities - of the streets. They are addicted to opiates, Hagigat, pain killers, prostitution, homelessness, garbage searching and "Junk collecting," and more. We found many functional, health and social disabilities, and high levels of 'every day' violence and victimization among this population, resulting from their Multiple-Addictions. *Conclusion and Recommendations:* We recommend adapting Multiple-Addictions treatments and 'harm reduction' interventions programs, as well as programs to address the behavioral and polysubstance addictions. We recommend to adopt more radical harm reduction approaches, similar to those used in some countries around the world which are aimed at dealing with social and health problems in the 'open drug scenes'.

OP-36

The social determinants of clustering effects between substance use, violence, and other risk behaviors of Israeli Youth: Findings from the WHO-HBSC survey

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This paper explores the complex behavioral co-morbidity of drugs and risk taking behaviors. Adolescent school children who experiment with binge drinking and drugs are more likely to develop risky life styles that expose them to social settings and types of peers that increase the likelihood of their involvement in violence, risk-taking behaviors and truancy. In fact, the strong association between problem drinking and use of cannabis and the involvement in violence is only partially due to the effects of the substance themselves. A significant percentage of variance is explained by the risky behavioral life style associated with substance use, that puts the teen at risk for violence and truancy. The study made use of data from the Israeli 2014 WHO-HBSC survey conducted on a representative sample of 16,145 school children ages 11-17. Findings show that cannabis users are 6 times more likely to report binge drinking and drunkenness compared to

non-users of cannabis. Those who reported binge drinking at least once during the past 30 days are 5 times more likely to be involved in bullying others 3 times or more during the past 2 months or report carrying weapons. Similar Odds Ratios were found for indicators of hidden dropout and truancy. The strong association between cannabis and excess alcohol drinking, and the behavioral association between substance use and risk taking behaviors such as violence and truancy are discussed from a perspective of social and cultural contexts of substance use and the life styles associated with youth culture and the unique social settings in which most of these behaviors take place. The co-morbidity between substance use and other risk taking behaviors is therefore an association that needs much more attention - both in research and in the development of policy and more effective intervention strategies and programs.

OP-37

Application of draft ICD-11 diagnostic guidelines for gaming disorder for treatment seeking patients

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Background and aims: With the increasing ubiquity of the Internet has come attendant concerns about excessive on-line usage and the consequences for health and social functioning. A definition of gaming disorder (GD) has been included in the latest beta draft of ICD-11. A draft clinical description and diagnostic guidelines for GD have been proposed, arising out of discussions at WHO meetings of experts in the fields of IUD and behavioural addiction, based on a careful review of current evidence. **Methods:** Subjects were 59 treatment seeking patients partaking in excessive use of gaming, seen at our center. The draft diagnostic guidelines for GD and the diagnostic criteria for Internet gaming disorder (IGD) contained in DSM-5 were applied to these patients. The clinical characteristics of

patients with GD were also examined. This study was approved by the ethical committee of our center. **Results:** Average age of the subjects was 19.1 years old and 92% of these were males. 73% and 34% of the subjects were addicted to online video games and smartphones games, respectively. The mean time spent on gaming on weekdays was 7.6 hours. 86% of the subjects met the draft diagnostic guidelines for GD. The concordance rate of diagnoses between GD and IGD was relatively high, and the positive predictive value of GD was 98%, if IGD was used as the golden standard of GD. **Conclusion:** The draft diagnostic guidelines of GD could be applied to clinical samples, and the concordance rate between GD and IGD was high, despite the difference in content of the two sets of guidelines.

OP-38

High prevalence of gambling disorder and its associated factors in Japan

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Background and aims: According to a recent meta-analysis, the lifetime prevalence of gambling disorder (GD) among adults is 1.6%. Although the Japanese prevalence of GD was assumed to be high because of a unique cultural relationship to gambling, there has been scant investigation into its prevalence among subjects representative of the adult population in the country. **Methods:** We conducted two national surveys in 2008 and 2013. The number of subjects was 7,500 and 7,059, respectively, aged 20 years or more. Subjects were selected using a two-step random sampling protocol. In addition to questions relating to alcohol, tobacco, and Internet use and use disorders, the South Oaks

Gambling Screen (SOGS) was included in the surveys. The cut-off score for GD was five points or more. **Results:** The prevalence of GD was 9.6% for men and 1.6% for women in 2008, which was far higher than that observed in other countries. A similar prevalence was found in the 2013 survey. No significant relationships between the rate of GD and education, marital status, occupation, or income level were seen. The vast majority of male pathological gamblers used pachinko as a gambling tool. **Conclusions:** The prevalence of GD was estimated to be high and was stable in Japan. Pachinko, a type of gambling, has a suggested association with this heightened prevalence.

OP-39

Decision-making in disordered social networking site use: Results from the Iowa Gambling Task

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Background and Aims: Behavioral addictions research has been criticized for neglecting the study of underlying psychological processes (1). Patients with substance use disorders (SUDs) prioritize immediate reinforcement provided by drugs over long-term negative consequences. We sought to assess if disordered social networking site (SNS) use is associated with comparable deficits in decision-making. **Methods:** 74 frequent internet users (50.0% female) completed the Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ) and Barratt Impulsiveness Scale (BIS-11). Disordered SNS use was assessed via mod-

ified DSM-5 criteria for “severe” SUD (2). The Iowa Gambling Task (IGT) quantifies real-world decision-making via 100 card draws from “advantageous” (small rewards, but net gain) versus “disadvantageous” (high rewards, net loss) decks (3). A minimum of 50 participants was required for adequate power ($\geq .95$) to detect medium-sized effects in mixed ANOVA. **Results:** Individuals with disordered SNS use (31.3%, $n = 21$) did not differ from controls in scores on the SPSRQ, BIS-11, IGT total monetary rewards earned or global net score (i.e., advantageous minus disadvantageous cards). Net scores across consecutive 20-card blocks

suggested improvement in performance over time in controls, but not in individuals with disordered SNS use; however, differences did not reach statistical significance ($p = .08$). **Conclusions:** The absence of marked decision-making deficits in disordered SNS use is consistent with a

recent study of problematic Internet users (4), and suggests that etiologic mechanisms differ from those implicated in SUDs. More research is needed to identify cognitive and other processes potentially involved in the development and maintenance of problematic SNS use.

OP-40

Functional Impairment in Disordered Social Networking Site Use: Evidence for a Pathological Condition?

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Background and Aims: Behavioral addictions research has been criticized for potentially overpathologizing normative behaviors (1). We sought to answer calls for research on impairment in hypothesized behavioral addictions by assessing psychosocial functioning in disordered social networking site (SNS) use. **Methods:** 93 frequent internet users (49.5% female) completed the Depression Anxiety Stress Scales (DASS-21). Forty items of the Drinker Inventory of Consequences (DrInC), a measure of psychosocial impairment resulting from excessive alcohol use, were modified to capture presence (yes/no, Cronbach's $\alpha = .85$) and frequency (0 = "never" to 3 = "daily," Cronbach's $\alpha = .78$) of impairment specifically in disordered SNS use. Disordered SNS use was assessed via modified DSM-5 diagnostic criteria for "severe" substance use disorder (2), and present in 35.7% ($n = 30$) of participants. **Results:** There was a significant

main effect of disordered SNS use on DASS-21 scores ($p = .001$, $\eta_p^2 = .20$), with elevated depression, anxiety, and stress in disordered SNS use (all $p < .01$). Disordered SNS use was associated with significantly more ($p < .001$, $d = 1.54$) and more frequent ($p < .001$, $d = 1.30$) impairments in psychosocial functioning, including reduced quality of work (endorsed by 69.2% of respondents with disordered SNS use), trouble sleeping (68.0%), failure to fulfill responsibilities (61.5%), and feelings of anger, upset, anxiety or depression (57.7%). Use of SNS to regulate affect, including to relax (96.2%) or distract from low mood and negative thoughts (88.9%), was also commonly endorsed. **Conclusions:** Proposed diagnostic criteria for disordered SNS use appear to capture a clinically meaningful cluster of symptoms that is associated with impairments in several domains of psychosocial functioning.

OP-41

Diversity in the implicit theories of addiction prevention that people hold: Age, religion and sex differences

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Background and aims: A preliminary requisite for the development of a sustainable program that aims to prevent a problem behavior, such as addiction, is to ensure that all those who are involved in the implementation of that program – i.e., the target group (e.g., school students), the relatives (e.g., parents, siblings) and those who are supposed to implement the intervention (e.g., teachers), etc. – believe in the effectiveness of the prevention program. The current research, composed of three studies, explored the reliability and validity of a new scale that measures people's belief in the possibility of preventing adolescents' risk behaviors. **Methods:** The Belief in Prevention (BiP) Scale includes 10 short descriptions of episodes of adolescents' risk-behaviors; among which 6 episodes deal with the prevention of drugs (2), alcohol (2) and cigarette (2) abuse. Respondents are requested to indicate their belief in the possibility of preventing each of the given problem behaviors, on a 6-point Likert Scale (1 – not at all; 6 – definitely yes). The BiP scale was developed through a series of explorations among school students and school counselors. The current study reports on the BiP's general reliability and validity,

alongside an analysis of its relevance in the context of addictions. **Results:** Study 1 ($N = 200$) demonstrated the high reliability and face validity of the new BiP scale. Study 2 supported the predictive validity of the BiP scale, in differentiation between at-risk youth ($N = 98$) and normative youth ($N = 100$), by indicating that at-risk males have the lowest levels of BiP. Study 3 (Total $N = 995$) was performed among representative samples of respondents who represent different sexes, ages (adolescents, parents and teachers) and religions (Muslims, Druze, Christians and Jews). The findings from Study 3 showed that adults more than adolescents, and female adolescents, more than male adolescents, have lower levels of BiP. The exception was Muslim adults, who report lower levels of BiP in comparison to all other participants, including Muslim adolescents. Principal component analysis with Varimax rotation yielded two general factors that were found amongst almost all of the religions and these are addiction and extreme behavior (e.g., suicidal behavior). Based on this notion, secondary analyses of Study 3 data focused on the BiP scores regarding the 6 addiction-related episodes (i.e., cigarette,

drugs and alcohol addiction). These analyses showed that belief in the ability to prevent drug addiction is higher than beliefs in the ability to prevent either cigarette smoking or alcohol abuse. However, significant age, religion and sex differences were found, with adolescents (vs. adults) and Muslims (especially vs. Druze) having a lower belief in the ability to prevent drug addiction. *Conclusions:* These findings suggest that BiP-level might play a significant role, as a moderator/determinant, in shaping both the effectiveness

and the efficacy of preventive interventions, including those dealing with addictions. Moreover, it seems that the challenge of addiction prevention is not equivalent across the various risk behaviors as well as across the various populations. Thus, it is suggested that frequently, preliminary differential interventions to promote (BiP) belief in the general ability to prevent addictive behavior(s), tailored to the specific target group, should exceed implementation of more specific preventive interventions.

OP-42

Smartphone use and smartphone addiction among Chinese high school students

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Background and aims: With the use of smartphone increasing rapidly among young people in recent years, smartphone has become an important part of their daily life. Many young people use smartphone constantly, making or receiving calls, as well as using various applications via mobile Internet. The mobility, high availability and easy accessibility make excessive smartphone use or smartphone addiction become a public concern. However, smartphone addiction, its association with smartphone use, and its predictors have not yet been well studied in Mainland China. Therefore, the aim of this study was to investigate the relationships between smartphone use, smartphone addiction, demographic characteristics, and psychological traits in Chinese high school students. *Methods:* In total, three hundred thirty four Chinese high school smartphone users (152 males and 182 females; mean age = 16.18 ± 0.45) participated in a survey assessing smartphone use, smartphone addiction, psychological traits, and demographic characteristics. The Smartphone Addiction

Scale, the Rosenberg Self-esteem Scale, and the brief Sensation Seeking Scale were implemented. The data were analyzed using multiple linear regression analyses. *Results:* The findings revealed that those older high school students with lower degree of self-esteem and higher degree of sensation seeking, showed higher degree of smartphone addiction. In addition, smartphone addiction, together with psychological traits, were significant predictors of smartphone use. *Conclusions:* This study provided insights into smartphone use, smartphone addiction, and predictors of smartphone addiction in Chinese high school students, which should be extended in further studies. The results indicated that compared to demographic characteristics, psychological traits provided a better account for smartphone addiction among Chinese high school students. High school students with high sensation-seeking scores should be paid more attention to their smartphone use. The findings can be useful for the screening, prevention and treatment of smartphone addiction.

OP-43

Gambling and Age: A Complex Relationship throughout the Lifespan

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Age and age of onset are strong moderators of the course and the evolution of disorders/diseases. However, the effects of current age in Gambling Disorder (GD) have rarely been examined. The aim of this presentation will be to analyze the moderating effects of the patients' current age and age of onset of the disorder in relation to personality traits, clinical outcomes and treatment response, in a large sample of more than 1.600 outpatients attending a specialized outpatient GD unit, in Barcelona (Spain). The results will suggest that the patients' age and age of onset of the

disorder influences psychopathological, clinical and treatment outcome. Intervention in the earliest manifestations of this complex problem is essential in order to better address the need of successful treatment planning. These empirical results provide new evidence about the underlying etiological process of dysfunctional behaviors related to gambling, and may help to guide the development of more effective treatment and prevention programs aimed at high-risk groups such as young men with specific personality traits.

OP-44

Gambling Habits in Spanish Women

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Introduction: There is evidence that gambling behavior can be problematic or pathological in women with certain vulnerabilities. Even, it has been observed that, similarly to what happened in other addictions, gambling problems in women has increased in recent years. In addition, studies on risk factors have generally analyzed samples of men. Often, in the case of women, harmful or excessive gambling is maintained due to emotional difficulties, dissatisfaction, frustration, etc. In any case, the scientific evidence that there are internationally on gambling behavior in women are very scarce. *Main objective:* The main objective of this study was to obtain information about gambling habits

in Spanish women from general population, and with an age range between 18–75 years. *Sample:* The total sample was 498 women (N = 316 from general population and N = 30 from a clinical setting). *Results:* More than a 3% of the females from the community sample presented a problematic gambling behavior. In relation to risk factors of problematic gambling behavior, low socioeconomic status, illusion of winning money through gambling or feeling better by gambling were powerful stimulators of gambling behavior. *Conclusions:* Despite the fact that being male is strongly associated with risk gambling, females can also be a risk factor group.

OP-45

Reward and punishment sensitivity in women with gambling disorder and compulsive buying behavior: implications in treatment outcome

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Background and aims: Gray's Reinforcement Sensitivity Theory has been widely applied to different clinical populations, but few studies have reported empirical evidence based on this theory for therapy outcome in patients with gambling disorder (GD) and compulsive buying (CB). The aims of this study were to explore the association between clinical variables and personality traits with reward and punishment sensitivity (RPS) levels in women (N = 88) who met diagnostic criteria for GD (n = 61) and CB (n = 27), and to determine the predictive capacity of RPS for primary short-term outcomes in a cognitive-behavioral therapy (CBT) intervention. *Methods:* The CBT intervention consisted of 12 weekly sessions. Data on pa-

tients' personality traits, RPS levels, psychopathology, sociodemographic factors, GD and CB behavior were used in our analysis. *Results:* High RPS levels were associated with higher psychopathology in both CB and GD, and were a risk factor for dropout in the CB group. In the GD group, higher reward sensitivity scores increased the risk of dropout. *Discussion and Conclusions:* This study suggests that sensitivity to reward and sensitivity to punishment levels independently condition patients' response to treatment for behavioral addictions. The authors uphold that cognitive-behavioral therapy interventions for such addictions could potentially be enhanced by taking RPS into consideration.

OP-46

Interpersonal violence, early life adversity and suicidal behavior in men with hypersexual disorder

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Background and aims: Few studies have investigated childhood adversity, interpersonal violence and suicidal behavior in hypersexual disorder. The aim of this study was to assess self-reported interpersonal violence in men with hypersexuality compared to healthy volunteers and to study association between the experience of interpersonal violence and suicidal behavior. **Methods:** The study includes 67 male patients with hypersexual disorder (HD) and 40 male healthy volunteers. The Childhood trauma questionnaire-Short Form (CTQ-SF) and the Karolinska Interpersonal Violence Scales (KIVS) were used for assessing early life adversity and interpersonal violence as a child and in adult life. Suicidal behavior (attempts and ide-

ation) was assessed with the Mini-International Neuropsychiatric Interview (MINI 6.0) and the Montgomery-Åsberg Depression Rating Scale-Self rating (MADRS-S). **Results:** Men with HD reported more exposure to violence in childhood and more violent behavior as adults compared to healthy volunteers. Suicide attempters (n = 8, 12%) reported higher KIVS total score, more used violence as a child, more exposure to violence as an adult as well as higher score on CTQ-SF subscale measuring sexual abuse compared to hypersexual men without suicide attempt. **Conclusions:** Hypersexuality was associated with interpersonal violence with highest total scores in patients with suicide attempt.

OP-47

Methylation of the HPA axis related genes in men with hypersexual disorder

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Background and aims: Hypersexual Disorder (HD) defined as non-paraphilic sexual desire disorder with components of compulsivity, impulsivity and behavioral addiction, was proposed as a diagnosis in the DSM 5. Some overlapping features between HD and substance use disorder including common neurotransmitter systems and dysregulated hypothalamic-pituitary-adrenal (HPA) axis function have been reported. In this study, comprising 67 male patients diagnosed with HD and 39 healthy male volunteers, we aimed to identify HPA-axis coupled CpG-sites, in which modifications of the epigenetic profile are associated with hypersexuality. **Methods:** The genome-wide methylation pattern was measured in whole blood using the Illumina Infinium Methylation EPIC BeadChip, measuring the methylation state of over 850 K CpG sites. Prior to analysis, the global DNA methylation pattern was pre-processed according to standard protocols and adjusted for white blood cell type heterogeneity. We included CpG sites located within 2000 bp of the transcriptional start site of the following HPA-axis coupled genes: Corticotropin releasing hormone (CRH), corticotropin releasing hormone binding protein

(CRHBP), corticotropin releasing hormone receptor 1 (CRHR1), corticotropin releasing hormone receptor 2 (CRHR2), FKBP5 and the glucocorticoid receptor (NR3C1). We performed multiple linear regression models of methylation M-values to a categorical variable of hypersexuality, adjusting for depression, DST non-suppression status, Childhood Trauma Questionnaire total score and plasma levels of TNF-alpha and IL-6. **Results:** 76 individual CpG sites were tested, and four of these were nominally significant ($p < 0.05$), associated with the genes CRH, CRHR2 and NR3C1. Cg23409074 – located 48 bp upstream of the TSS of the CRH gene – was significantly hypomethylated in hypersexual patients after corrections for multiple testing using the FDR-method. Methylation levels of cg23409074 were positively correlated with gene expression of the CRH gene in an independent cohort of 11 healthy male subjects. **Conclusions:** CRH is an important integrator of neuroendocrine stress responses in the brain, modulating behavior and the autonomic nervous system. Our results show epigenetic changes in CRH gene related to hypersexual disorder in men.

OP-48

A closer look at tolerance in Internet gaming disorder

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Background and aims: The inclusion of Internet gaming disorder in the DSM-5 was a tentative endorsement of its status as an addictive disorder. However, applying the addiction concept of tolerance to a complex activity like gaming appears problematic. After all, what specific stimuli do individuals with IGD develop a tolerance for? The DSM-5 refers to “*the need to spend an increasing amount of time engaged in Internet games*”. This description may be appealing for its simplicity, but it may not be valid to equate *time* with *dose*. This talk will present some new findings on the ‘dose-effect’ relationship in gaming. **Methods:** An online survey of 630 adult gamers from gaming communities. We measured gaming activity levels, IGD symptomatology, and features of gaming *dose*, including

structural characteristics and aspects of play, such as rewards, challenges, completion criteria, and attainment of status and power. **Results:** Factor analysis identified three components of relevance to tolerance – *Inadequacy* (i.e., a perception that gaming sessions of any duration are not satisfying), *Achievement* (i.e., a need to continually make progress, compete, and overcome more difficult challenges) and *Wealth* (i.e., a need to accumulate increasing amounts of valuable game items). **Conclusions:** Tolerance in problem gaming may be more complex than the simple requirement of spending more time in the game. These data suggest that some players have a multitude of game-related needs that contribute to repetitive and time-consuming behaviours that occur both within and outside of games.

OP-49

Current state of research on intervention measures targeting Internet gaming disorder

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Background and aims: Treatment services for gaming problems are increasingly prevalent worldwide and particularly in regions across East Asia. There is an associated need for an evidence base to guide practitioners treating diverse populations. This presentation will provide a summary of the international Internet gaming disorder treatment literature, and consider the extent to which the literature may have improved over time. **Methods:** We conducted an assessment of the reporting quality of 30 treatment studies undertaken in Western and Eastern countries in the past decade. Reporting quality was defined according to the 2010 Consolidating Standards of Reporting Trials

(CONSORT) statement. **Results:** Intervention studies are characterised by a number of unfortunate weaknesses, including (a) inconsistencies in the definition and diagnosis of disordered use; (b) a lack of randomization and blinding; (c) a lack of adequate controls; and (d) insufficient information concerning recruitment dates, sample characteristics, and treatment effect sizes. While most studies lack adequate follow up, there are some compelling studies that report gains in IGD symptomatology. **Conclusions:** The research base on treatment of IGD is promising, particularly for CBT approaches, but demands greater consistency and standardization to meet gold standards.

OP-50

Social media and internet gaming disorder: The role of internet-specific parenting

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Background and Aims: of the present study was to investigate the role of internet-specific parenting (reactive mediation, internet-specific rules and frequency of communication about internet use) in adolescents’ symptoms of social media disorder (SMD) and internet gaming disorder (IGD). In addition, we investigated whether this relationship was dependent on the internet-specific quality of communication. **Methods:** A sample of 352 adolescents (48.9 % boys, M age = 13.9, SD = .74, range 11–15) completed paper-and-pencil questionnaires on two waves annually. Linear regression analyses in Mplus were performed to predict the level of IGD and SMD symptoms

for boys and girls separately, while controlling for age, level of education and outcome at T1. **Results:** A higher frequency of communication predicted more IGD symptoms ($\beta = 0.26, p = .02$) among boys, and more restrictive rules marginally predicted fewer SMD symptoms ($\beta = -0.15, p = .07$) among girls. No other significant direct effects of parenting behavior on IGD and SMD symptoms were found. For boys, a lower quality of communication enlarges the aversive effect of stricter internet-specific parenting and more frequent communication. Among girls, higher quality of communication about internet protects adolescent girls from the lack of strict parenting on

SMD and IGD. *Conclusions:* This is one of the first longitudinal studies addressing the role of internet-specific parenting in preventing IGD and SMD symptoms, suggesting that current parenting variables contribute little to our understanding of IGD and SMD symptoms among boys and

girls. Moreover, the role of quality of communication in the effect of internet-specific parenting is fairly different for boys and girls. Therefore, more investigation into the role of internet-specific parenting is needed with a closer look at gender effects.

OP-51

Psychometrics properties of a problematic pornography use scale and associations with psychological and clinical characteristics in US military veterans

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Background and aims: Although most individuals viewing pornography experience few problems with pornography, a subset of individuals report significant problems managing their use. The Problematic Pornography Use Scale (PPUS) was developed to assess for problematic use of pornography among adults living in Israel. Despite its initial promising psychometric properties, the PPUS has not been validated among US adult pornography users. To investigate further, the current study evaluated the psychometric properties of the PPUS in a sample of males and females reporting pornography use. *Methods:* A sample of 223 US military veterans completed measures assessing demographics, psychopathology, frequency of pornography use,

craving for pornography, problematic use of pornography, hypersexuality, and impulsivity. *Results:* Findings found that the PPUS demonstrated high internal consistency, convergent, discriminant, and construct validity. Higher PPUS scores were associated with higher frequency of weekly pornography use, male gender, craving for pornography, and affective disorders. *Conclusions:* The PPUS showed promising psychometric properties among a sample of US veterans reporting pornography use, although additional research is needed to examine its factor structure and determine the appropriate threshold to accurately detect problematic use of pornography among clinical and nonclinical samples.

OP-52

Impairment of decision making measured by the Iowa Gambling Task in alcohol dependence and gambling disorder: A systematic review and meta-analysis

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Background and aims: Gambling disorder (GD) and alcohol dependence (AD) share many similar features, such as increased impulsivity, and deficit in decision making. This is closely related to relapse and poor therapeutic outcome in both disorders, which renders the degree of decision making deficit and its relevance in the clinical pictures of GD and AD highly significant. Based on these facts, the main aim of this study was to systematically review empirical data concerning decision making impairment in patients diagnosed with GD or AD compared to healthy control groups. Moreover, this is the first meta-analysis to explore whether patients with GD and AD report the same level of decision making impairment using one of the most frequently used measures of impulsivity: the Iowa Gambling Task (IGT). *Methods:* Our systematic literature search of three databases (Medline, ScienceDirect and Web of Science) resulted in

1198 findings from which 17 could be included into our meta-analysis after applying all exclusion criteria. *Results:* The random effects estimate indicated impaired IGT performance in both AD patients (N = 500; d = -0.581, CI: -89.5 < δ < -26.6%) and even more so in GD patients (N = 292; d = -1.034, CI: -156.1 < δ < 50.7%) compared to healthy control groups. *Conclusions:* This is the first systematic review and meta-analysis of decision making deficit measured by the IGT in patients diagnosed with either AD or GD, which indicated detectable deficit in patient groups' decision making compared to healthy controls. Based on our results, the detailed knowledge of the relative contributions of decision making deficits to the clinical and therapeutic outcome of these two disorders is of high importance. *Keywords:* alcohol dependence, gambling disorder, Iowa Gambling Task, impaired decision making

OP-53

How impulsivity is related to problematic pornography use? Longitudinal study among participants of 12-steps sexual addiction treatment program

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Background and aims: Some research show relation between impulsivity and pornography use (Mainer et al., 2009; Mick & Hollander, 2006; Davis et al., 2002; Shapira et al., 2000). One aspect of impulsivity is the ability of delaying gratification and discounting. It remains unknown whether deferment of gratification is the cause or the result of frequent pornography use. **Methods:** We measured discounting by MCQ questionnaire (Monetary Choice Questionnaire; Kirby & Marakovic, 1996) in two studies. In Study 1, data were collected from surveys conducted on a members of 12-steps groups for sexual addiction ($N = 77$, mean age 34.4, $SD = 8.3$) and control individuals ($N = 171$, mean age 25.6, $SD = 6.4$). In Study 2, we conducted repeated measurement after 3 months on a 17 members of 12-steps group for sexual addiction from Study 1 ($N = 17$, mean age 34.8, $SD = 2.2$). The average time of sexual abstinence in clinical group was 243.4 days ($SD = 347.4$, $Min. = 2$, $Max. = 1216$; Study 1) and 308.5 days ($SD = 372.9$, $Min. = 1$, $Max. = 1281$; Study 2). Both studies were performed via the Internet. **Results:** In Study 1 time spent on pornography and masturbation was correlated positively with the discounting parameter. Correlations between these variables were stronger in among sex addicts (masturbation frequency, $r = 0.30$, $p < 0.05$; pornography use, $r = 0.28$, $p < 0.05$) than the control group (masturba-

tion frequency, $r = 0.23$, $p < 0.05$; pornography use, $r = 0.19$, $p < 0.05$) The strongest correlation ($r = -0.39$) occurs between the discounting parameter and sobriety among sex addicts. Contrary to our hypothesis average discounting function parameters were higher in control group than in group of sex addicts. In Study 2, results didn't show significant relation between discounting and time of sexual abstinence. However, groups did not significantly differ in discounting between measurements and gain in sobriety during 3 months was not accompanied by decrease of discounting. Changes in sobriety could be better explained by number of mentee on 12-step program ($r = 0.92$, $p < 0.05$) or current step in 12-steps therapy ($r = 0.68$; $p < 0.001$) than by discounting. **Conclusions:** The ability of delaying gratification is rather not modified by the pornography use. Probably it is a constant feature that can determine the frequency of pornography use in the general population. Among the members of the 12-steps groups for sex addicts the ability of delaying gratification, paradoxically, is higher than in the general population and is not modified during 3 months of working on a 12-steps program. Moreover, discounting does not change with the time of abstinence. This result may suggest that individuals with low discounting may be more prone to benefit from 12-step program, than those with high discounting.

OP-54

Pornography avoidance self-efficacy scale: Psychometric properties

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Background and aims: The presented study examined whether participants' self-efficacy to avoid using pornography in each of 18 emotional, social, and sexually arousing contexts was associated with their typical frequency of pornography use. **Methods:** Using a web-based data collection procedure, 229 male pornography users who had sought or had considered seeking professional help for their use of pornography completed questionnaires assessing their context-specific self-efficacy, history of pornography use, self-efficacy to employ specific pornogra-

phy-reduction strategies, clinical hypersexuality, and demographic characteristics. **Results:** A series of ANOVAs showed that frequency of pornography use was significantly and negatively associated with level of confidence in 12 of the 18 contexts. Similarly, we found that lower hypersexuality and higher confidence to employ pornography-use-reduction strategies were associated with higher confidence to avoid using pornography in each of the 18 situations. An exploratory factor analysis also revealed three clusters of situations: (a) Sexual arous-

al/Boredom/Opportunity, (b) Intoxication/Locations/Easy access, and (c) Negative Emotions; the two remaining situations did not load on any of three clusters. Because only one of the three clusters reflected a consistent theme, we do not recommend averaging self-efficacy within clusters

comprised of different types of situations. *Conclusions:* Mental health clinicians could use the questionnaire to identify specific higher risk situations for relapse in individuals seeking to reduce or stop using pornography problematically.

OP-55

Brief Pornography Screener: A comparison of US and Polish pornography users

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Background and aims: The current study evaluated the psychometric properties of a newly developed six-item questionnaire designed to identify behaviors, thoughts, and experiences associated with problematic use of pornography. *Methods:* In Studies 1 and 2, 223 US military veterans and 703 Polish community members were administered the Brief Pornography Screener (BPS) and measures assessing frequency of pornography use, craving for pornography, problematic use of pornography, clinical hypersexuality, and impulsivity. In Study 3, 26 Polish male clinical patients were administered the BPS and measures of psychopathology. *Results:* In Study 1, findings supported dropping one item from the questionnaire; the five remaining items were subjected to an exploratory factor analysis which yielded a one-factor solution with an eigenvalue of 3.75 that accounted for 62.5% of the total variance. The BPS also demonstrated high internal reliability ($\alpha = 0.89$). Next, we found that BPS scores were significantly and

positively associated with craving for pornography, problematic use of pornography, and hypersexuality, but weakly related to impulsivity. In Study 2, findings were similar in that BPS scores were positively associated with a measure of hypersexuality but weakly associated with scores on measures assessing obsessive-compulsive symptoms and impulsivity. Results also indicated that the one-factor solution yielded an excellent fit: $\chi^2/df = 5.86$, $p = 0.00$, RMSEA = 0.08, SRMR = 0.02, CFI = 0.99, and TLI = 0.97. In Study 3, we assessed the classification quality of BPS using an *a priori* selected group of patients against a control group. The ROC analysis indicated that the AUC value was 0.863 ($SE = 0.024$; $p < 0.001$; 95% CI: 81.5–91.1). *Conclusions:* The BPS demonstrated promising psychometric properties across both US and Polish samples and could be used by clinicians in mental health settings to identify individuals with possible problematic use of pornography.

OP-56

The effects of a parental guide for the prevention of video game problems in children: A randomized controlled trial

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Backgrounds and Aims: Excessive use of video games among children and adolescents is a growing concern. The aim of this study was to investigate the effect of a short parental guide with advices on how to best regulate video game behaviour in children. *Methods:* A random sample of parents with children between the ages of 8–12 years old ($N = 5864$) were drawn from the Norwegian Population

Registry and equally randomized into an intervention and a control group. After developing the guide based on clinical and research literature it was distributed to the intervention group. After four months, a survey comprising questions about demographics, sleep, time spent gaming, parental video game regulation behavior and video game problems in the child were administered. *Results:* Independent t-test

revealed no significant differences between the two groups (N = 1657, response rate 30,1%) on any outcome measure. Those in the intervention group that reported to have read the guide reported more intensive gaming behavior and more video game problems in their child than those in the intervention group that had not read the guide. *Conclu-*

sions: The guide was not effective in preventing problematic video gaming in children. Distinctions between those who studied the guide carefully and those who did not, may indicate that parental guides are better used as providing information to those who already have problems rather than as a mean of primary prevention.

OP-57

What specific computer games addicted teens' traits may contribute to addictive behavior?

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Background and aims: The virtual world has practically no unsolvable problems: 3 yrs of playing experience gives a teen the feeling of mastery over life, the strongest motivation to play (Voiskunsky, 2004). It contributes to the life style and everyday hassles of every 1 in 12 teens showing signs of behavioral addiction to video games. Studies show that more impulsive children with ADHD sought to play more video games that later increased attention problems (Gentile et al, 2012). Another opinion stresses the games' great didactic efficiencies for brain and behavior (Han & Renshaw, 2011). We suggested: there must be more specific personality traits distinguishing game addicted adolescents. *Aim:* to present study results about interPlay of traits (anxiety, locus of control, coping-strategies, values) in two samples of teens – “gamers” (n1= 66 teens aged 16–17; most males), and “non gamers”. *Methods:* a screening computer

addiction test, STAI, ACS, Locus of Control scale, Values inventory. *Results:* The hypothesis about, significant differences between 2 samples in higher trait anxiety ($p < 0.005$), external locus of control ($p < 0.001$) was supported. There are quite different dominant coping-strategies used by addicted teens: distraction (distancing), self-absorption, not-coping and ignoring more often while not addicted sample, that prefer problem-solving, friends, achievements, positive focusing and belonging ($p < 0.01$ – $p < 0.000$). Thus the addicts' coping is less productive in meeting everyday stress. Playing games becomes the way of coping with adverse events, loneliness, academic stress. Among the leading values of addicts are having fun; recognition and wealth ($p < 0.003$). *Conclusions:* special policy towards teens' game addiction must work on how to minimize the potential harms.

OP-58

Problematic mobile phone use and mobile phone addiction

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Background and aims: Contemporary technological developments have led to a substantial increase in using mobile technologies. The UK has been considered a “smartphone society” with 93% of the population using smartphones and spending an average of 20 hours per week on their phones. Whilst mobile phone use has become commonplace in today's society, concerns have been raised regarding problematic mobile phone use and mobile phone addiction. *Methods:* This talk will provide an introduction into our current understanding of problematic mobile phone use and mobile phone addiction. A number of recent studies from psychological, computer science and cultural perspectives will be discussed and results presented. *Results:* Behavioural data using computational paradigms suggested the number of received mobile phone notifications is predictive of negative affective states (Kanjou et al., 2017). Cross-cultural

data indicate heavier mobile phone use in Northern and Southern Europe relative to Eastern and Western Europe (Lopez-Fernandez et al., 2017). Moreover, psychometric assessments of mobile phone users indicated stress (rather than depressive and anxiety symptoms) significantly predicts problematic mobile phone use, and there appear differences in use across age (Kuss et al., 2017). *Discussion and Conclusions:* Problematic mobile phone use is characterised by particular usage patterns, and associated with various psychosocial and demographic variables, some of which may increase the vulnerability of developing addiction-related symptoms. Moreover, there appear cultural differences in use and abuse of mobile phones. Research on problematic mobile phone use and addiction is in its infancy and follow-on research is encouraged to apply interdisciplinary and culturally sensitive approaches.

OP-59

**Social networking sites and social media addiction:
Insights from current empirical research**

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Background and aims: Social networking sites (SNS) are virtual communities allowing users to create individual public profiles, engage with followers and friends, and meet people based on common interests. These sites are considered a “global consumer phenomenon” given their widespread appeal and usage. Whilst social networking and social media use is rising on a global scale, concerns have been raised regarding the potentially detrimental impacts on users’ mental health, highlighting addiction-related symptoms may develop as a consequence of overuse. This talk will provide an introduction into our current understanding of problematic social media use and social media addiction. *Methods:* A number of recent studies will be discussed and results presented. *Results:* The use of social networking sites and social media has been shown to significantly predict self-reported Internet addiction scores in samples of

Dutch adolescents (Kuss et al., 2013a) and UK university students (Kuss et al., 2013b). Research using Norwegian adults suggests ADHD, OCD, anxiety and depression significantly predict addictive social media use (Andreassen et al., 2016). A recent study using young UK adults (Donnelly & Kuss, 2016) indicates that the use of Instagram may be particularly problematic regarding both associated depression and addiction, over and above the use of Facebook, Twitter and Snapchat. *Discussion and conclusions:* SNS and social media addiction appear as distinct potential disorders separate from other potentially problematic technological addictions, such as gaming addiction, and are associated with a variety of psychopathological symptoms. Research implications include assessing different types of social media use, and studying social media use and possible addiction qualitatively from a user motivation perspective.

OP-60

Sexual arousal reaction to pornographic stimuli mediates the relationship between predisposing personal characteristics and symptoms of Internet-pornography-viewing disorder

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Background and aims: Main factors underlying Internet-pornography-viewing in general are seeking sexual excitation and sexual pleasure, satisfying sexual curiosity, or avoiding aversive emotions (Reid et al., 2011). The I-PACE (Interaction of Person–Affect–Cognition–Execution) model of specific Internet-use disorders (Brand et al., 2016) postulates an interaction of user’s personal characteristics, affective responses, cognitive processes, and executive functions with the gratification gained by viewing Internet-pornography. The aim of the study was to investigate the relationship between the personal characteristics such as pornography-viewing motivation, psychological symptoms, and perceived stress with sexual arousal as reaction to pornographic material and tendencies towards Internet-pornography-viewing disorder (IPD). *Methods:* Male participants ($N = 88$) were investigated in a laboratory setting. Questionnaires assessed tendencies towards IPD, pornography-viewing motivation, psychological symptoms, and perceived stress.

Moreover, participants viewed pornographic pictures and indicated their sexual arousal and their need to masturbate before and after cue presentation. *Results:* The results showed that tendencies towards IPD were strongly associated to all factors of pornography-viewing motivation, psychological symptoms, perceived stress, and indicators of sexual arousal reactions. Moreover, the need to masturbate partially mediated the relationship between the motivation to view pornography and the relationship between psychological symptoms and stress with symptoms of IPD. *Conclusions:* The findings showed that tendencies towards IPD were associated to the postulated personal characteristics and that this relation was partially mediated by an indicator of sexual arousal. Thus, the results are in line with the I-PACE model and strengthen the assumption that future research should focus on the interaction of specific variables beyond bivariate correlations to give further insights into the psychological mechanisms underlying IPD.

OP-61

Exploring the neural basis of emotional inhibitory control and self-concept in internet gaming and social network disorders

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Background and aims: Internet gaming disorder appears to be associated with self-concept deficits and increased identification with one's avatar. For increased social network use, the few existing studies suggest striatal-related positive social feedback as an underlying factor. Furthermore, few study findings indicate that internet addicts generally have problems in emotional inhibitory control processing. **Methods:** Pathological and addicted internet gamers as well as social network users were compared with healthy controls regarding psychometric and neurobiological measures of self-concept-related characteristics, avatar identification and emotional inhibitory control processing. **Results:** Psy-

chometric results indicated that both subgroups showed higher self-concept deficits compared to healthy controls. Neurobiologically, different brain activation patterns were observed in the subgroups during self-knowledge retrieval and inhibition of emotional stimuli. Furthermore, addicted internet gamers showed a higher identification with the own avatar, mirrored in an increased left angular gyrus activation, a region functionally associated with identification processing and feelings of empathy. **Conclusions:** These findings provide a starting point for the deduction of specific psychotherapeutic treatment approaches for addicted internet gamers and social network users.

OP-62

Compulsivity and impulsivity in sexual addiction

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Sexual addiction has frequently been characterized as a disorder of impulsivity, suggesting that the initiation and/or persistence of the problematic behavior may be due to an inability to suppress impulses to engage in the rewarding behavior. Current findings related to this disorder, however, have suggested that in addition to impulsivity, compulsivity may play a notable role in the presentation and perpetua-

tion of sexual addiction. This presentation will present new neurocognitive and neuroimaging data regarding the broader clinical domains of compulsivity and impulsivity in sexual addiction. Particular emphasis will be placed on current understanding of neurobiology and neurocognition in patients with sexual addiction and how these data may improve treatment approaches.

OP-63

Biological substrate for the co-existence of behavioral addictions and substance use disorders: a concise overview and some clinical topics

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Substance use and behavioral (addiction) disorders are complex psychiatric conditions characterized by compelling and compulsive involvement in gratifying rewarding stimuli, in spite of unfavorable outcomes. Despite the engagement of multiple and expected psychosocial elements, biological processes appear to be crucially involved in the genesis of these disorders. The permanent or repeated passive or active exposure to an addictive stimuli, is supposed to be the essence of the dysfunction that steers and manages induction, growth, expansion, evolution and maintenance of a substance use disorder or a behavioral addiction. Addictive stimuli are reinforcing or substantially

increase the probability that an individual will actively look for repeated exposure to them which are perceived as basically gratifying. These substance use and behavioral disorders are pathologies of the brain's reward system. These conditions emerge via transcriptional and epigenetic mechanisms. They may take place from subsequent and permanent exposure to addictive stimuli. These stimuli can be substances or behaviors. Δ FosB, a gene transcription factor, appears to be a common and vital factor in the development of all forms of behavioral addictions and substance use disorders. Genetic overexpression of Δ FosB in the D1-type medium spiny neurons of the nucleus accumbens is

associated to the degree of compulsion. Δ FosB expression in these neurons straightly and positively regulates substance self-administration and reward sensitization via positive reinforcement, whereas reducing and diminishing sen-

sitivity to aversion. In sum, it appears to be the common denominator of these fascinating substance use and behavioral co-occurring disorders. An overview will be presented and some clinical topics will be discussed.

OP-64

A study on the relationship between exercise addiction, abnormal eating attitudes, anxiety and depression among athletes in Israel

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A study on the relationship between exercise addiction, abnormal eating attitudes, anxiety and depression among athletes in Israel. *Background and aims:* There is previous evidence that exercise addiction is associated with depression among athletes. The aim of the current study was to investigate the relationship between exercise addiction and abnormal eating attitudes, anxiety and depression among competitive and amateur athletes. *Methods:* Participants were 102 athletes mean age 28.3 years (18–62), 67 males and 35 females, consisted of competitive and amateur athletes who participated in individual and group sports. All subjects are engaged in exercise more than 8 hours per week. They filled in the Exercise Addiction Inventory, Body shape questionnaire, a questionnaire assessing abnormal eating attitudes, Spielberger Trait-State Anxiety Inventory (STAI) and Beck Depression Inventory (BDI). *Results:* Ratings of exercise addiction were associated with BDI scores in all participants $r = 0.224$; $p = 0.012$. Individual athletes scored

marginally higher on depression scores than group athletes ($t = -2.125$; $p = 0.054$) but there was no difference in depression scores between competitive and amateur athletes. Exercise addiction scores were associated with the questionnaire scores assessing abnormal eating attitudes ($r = 0.278$; $p = 0.002$). Exercise addiction scores were not associated with trait or state anxiety scores. Multiple regression analysis revealed that abnormal eating attitudes contributed significantly to ratings of exercise addiction and explained 7.7% of the variance $\beta = 0.278$, $R^2 = 0.077$, $F(1,99) = 8.28$, $p < 0.05$. *Conclusions:* This study extends our preliminary findings of an association between exercise addiction and depression. Individuals who exercise for competitive and recreational purpose may use it as a means for alleviating depression. Abnormal eating attitudes may explain most of the variance of exercise addiction. This evidence supports previous evidence for comorbidity between exercise addiction and eating disorders.

OP-65

Treatment seeking for problematic pornography use among women

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Backgrounds and aims: Previous studies examined psychological factors related to treatment-seeking for problematic pornography use (PU) among males. In this study we focused on females who seek treatment for problematic PU and examined the differences with regards to variables related to problematic PU between this group and the group of women that did not seek such treatment. Secondly, we investigated the relationships between critical constructs related to problematic PU with path analysis method, emphasizing the predictors for treatment-seeking among women. We also compared our results to previous studies on males. *Methods:* A survey study was conducted on 719 Caucasian females 14 to 63 years old, including 39 treatment-seekers for problematic PU (referred by psychotherapists after their

initial visit) *Results:* Treatment-seeking among females is related to negative symptoms associated with PU, but also to the mere amount of PU. This stands in opposition to previously published analyses on males. Additionally, in the case of females, religiosity is a strong, significant predictor of treatment seeking. *Discussion:* Differently from previous studies that focused on male samples, our analysis showed that in case of women mere amount of PU may be related with treatment-seeking behavior even after accounting for negative symptoms associated with PU. Moreover, religiousness is a significant predictor of treatment seeking among women, what may indicate that in case of women, treatment seeking for problematic PU is motivated not only by experienced negative symptoms of PU, but also personal

beliefs about PU and social norms. Those factors should be taken into account in treatment. *Conclusions:* Negative symptoms associated with pornography use, frequency of

pornography use and religiousness are associated with treatment-seeking among women – this pattern is different than the results obtained in previous studies on males.

OP-66

Effectiveness of integrated health care for internet use disorders in adolescents and young adults

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Background and aims: Although first treatment approaches for Internet Use Disorders (IUD) have proven to be highly effective, health care utilization remained disappointingly low. This may be caused by inconsistent service structures, treatment gaps and missing treatment compliance. New treatment approaches have focused on undersupplied populations and emphasized the strength of integrated health care systems, which have been found to be cost-effective, to facilitate access and to reduce burdens of health care utilization. Stepped-care interventions, in which the treatment intensity is matched to individual levels of impairment, focus on individualized therapy and simultaneously take account of limited resources. *Methods:* The *Integrated Health Care Network for Diagnostics, Counseling and Treatment of IUD (IDCT)* comprises 13 institutions in Heidelberg, Germany. In line with stepped-care models, the treatment approach was intended to (a) be easily accessible and comprehensive (i.e., offering low-threshold services and continuity of care), (b) cover the variety of comorbid syndromes and (c) take account of the heterogeneous target group and

individual levels of impairment. Effectiveness was investigated in a one-armed prospective intervention study on $N = 120$ patients from 2012–2016. *Results:* First, patients treated at the IDCT showed significant improvement in compulsive internet use over time, as measured by multilevel analyses (Intercept: $\gamma_{00} = 35.45$, $SD = 2.35$; Slope: $\gamma_{10} = -3.94$, $SD = 1.10$, $p < .001$). Second, differential effects were found depending on patients' compliance, demonstrating that high compliance resulted in higher rates of change ($\gamma_{11} = -5.09$, $SD = 2.06$, $p < .05$). Third, we found that patients referred to addiction counseling (minimal intervention) did not differ significantly in amount of change from patients referred to psychotherapy (intensive treatment; $M_{\text{psychotherapy}} = 11.34$, $SD = 14.36$, $M_{\text{AddictionCounseling}} = 5.23$, $SD = 9.60$, $t = 1.21$, $p = .24$). *Conclusions:* Tailored interventions result in higher efficiency through optimized resource allocation and equal effectiveness (non-inferiority) in all treatment conditions. Moreover, comprehensive, low-threshold interventions seem to increase health service utilization.

OP-67

School-related risk factors associated with Internet gaming disorder and internet addiction

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Background and aims: Associated characteristics of Internet Gaming Disorder (IGD) concerning school and learning problems have repeatedly been discussed. However, almost no research has tested risk factors associated with IGD using valid psychometric measurements of school-related variables and IGD according to DSM-5 criteria. An improved understanding of the risk factors associated with IGD is crucial for developing optimally effective prevention programs and for identifying the youth most in need of these programs. *Methods:* $N = 5,470$ high-school students aged 11–20 years ($M = 14.68$, $SD = 1.91$) were screened for risk of illness onset using the Compulsive Internet Use Scale. Of these, more than 400 high-risk adolescents received a broad assessment battery. In addition to data on school performance (grades) and school absenteeism, we used the General Procrastination Questionnaire (APROF) and the *Student Evaluation Schedule for Social Behavior and Learning Behavior (SSL)* to assess school-related variables. IGD according to DSM-5 was measured using the Video Game Addiction Scale (CSAS). IA was

measured using the same criteria referred to excessive Internet use. *Results:* In adolescent boys, IGD was moderately – strongly associated with impaired social and learning behavior (i.e., lower self-regulation, self-assertion, cooperation, autonomous learning, persistence, concentration). In contrast, IA was associated with excessive procrastination behavior, task aversion and preference of alternative tasks. In adolescent girls, IGD was associated with neither social and learning behavior nor procrastination behavior. However, IA was low – moderately associated with impaired social and learning behavior. *Conclusions:* We found different profiles of associated school-related characteristics depending on the specific syndrome (IGD vs. IA) and gender in this high-risk adolescent sample, indicating that IGD and IA are two distinct syndromes associated with specific school-related problems. These findings imply that interventions aiming at prevention of illness onset should be differentiated by syndrome and respectively focus on modification of specific risk factors associated with IGD or IA.

OP-68

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Background and aims: Smartphones are becoming a daily necessity for most undergraduates in Mainland China. Because the present scenario of problematic smartphone use (PSU) is largely unexplored, in the current study we aimed to estimate the prevalence of PSU and to screen suitable predictors for PSU among Chinese undergraduates in the framework of the stress-coping theory. **Methods:** A sample of 1062 undergraduate smartphone users was recruited by means of the stratified cluster random sampling strategy between April and May 2015. The Problematic Cellular Phone Use Questionnaire was used to identify PSU. We evaluated five candidate risk factors for PSU by using logistic regression analysis while controlling for demographic characteristics and specific features of smartphone use. **Results:** The prevalence of PSU among Chinese under-

graduates was estimated to be 21.3%. The risk factors for PSU were majoring in the humanities, high monthly income from the family (≥ 1500 RMB), serious emotional symptoms, high perceived stress, and perfectionism-related factors (high doubts about actions, high parental expectations). **Conclusions:** PSU among undergraduates appears to be ubiquitous and thus constitutes a public health issue in Mainland China. Although further longitudinal studies are required to test whether PSU is a transient phenomenon or a chronic and progressive condition, our study successfully identified socio-demographic and psychological risk factors for PSU. These results, obtained from a random and thus representative sample of undergraduates, opens up new avenues in terms of prevention and regulation policies.

OP-69

**The evolution of a potential behavioural addictions through technologies:
an explorative study from excessive online users' perspective**

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Background and aims: The addictive behavioural problematic with technologies and online activities has been initially treated as Internet addiction (IA) and recently is starting to be more refined with terms such as the Internet Gaming Disorder (IGD). These concepts were academically introduced inside the American Psychiatric Association (APA, 1996, 2013). Therefore, it seems there is an international recognition of excessive technological uses as a public health concern. However, little is known about the phenomenology of these potential addictions. This work explores their etiology, development, and consequences from excessive online users' perspective. **Methods:** A qualitative study with a phenomenological approach was conducted. The participants were undergraduates classed as potential online excessive users, who agreed participated voluntarily in a discussion about the existence of these online addictive

problems, their characteristics and their evolution alongside their development. **Results:** In general, they agree excessive technological uses could cause different types of problems; They express with their own words how they view addictive issues in relation with online activities. They also provided a quite range of potential causes, with factors from different nature that could facilitate the online addictive problematics. Moreover, they identified consequences associated to these types of health issues. **Discussion and conclusions:** These last two decades, concerns and debates had arisen in relation to IA, and recently into IGD, and research has been mainly focused in assessing through psychometric questionnaires these problematics. However, few research has been carried out through a qualitative exploration about these phenomena. Findings and illustrations will be shared and discussed, as well as the lessons learned.

OP-70

Gambling motives: a process underlying cognitive distortions on gamblers?

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Background and Aims: Literature agrees that gambling motives and cognitive distortions are involved in gambling activities (Vallerand et al., 2003). Gambling behavior is partly the result of various and varied motivations leading individuals to participate. Gamblers have specific motivations profiles depending on the type of game, the kind and the intensity of game allowing to make distinction between recreational gamblers and pathological risk (Burlacu et al., 2013; Lee et al., 2007). Moreover, presence of motivations among gamblers has influence on the development of erroneous beliefs (Gandolfo et al., 2014). Inherent to gambling situations, cognitive distortions also play a role in the onset, development and maintenance of gambling, leading gamblers on the one hand to overestimate the share of control and on the other hand to underestimate or deny the part of chance and luck (Barrault & Varescon, 2012). This study is aimed to explore the nature of the relationship between both gambling motives and gamblers' beliefs, and to compare that between problem gamblers and non-problem gamblers. **Methods:** Participants were recruited, from June to October 2016, in online gambling forums once the agreement of administrators have been given. Then, 273 adult gamblers (online and live) completed online self-report scales assessing sociodemographic data, pathological gambling (SOGS), gambling motives (GMQ) with the additional financial motive items, and gambling relative cognitive distortions (GRCS). Due to a very small sub-sample of women ($n = 6$), we have chosen to present the data obtained only on men. Participants were grouped according SOGS scores: non-problem gamblers (NPG, $n = 65$), at risk gamblers (RG, $n = 163$) and problem gamblers (PG, $n = 39$). Data collection was carried out using an

anonymous file and then placed in a data bank. All statistical analysis (ANOVA, correlation and linear regression) was carried out with SPSS (version 21). **Results:** All gamblers recruited displayed a particular sociodemographic profile: they were young men, graduates of higher education, mostly executives followed by students, single or married, mostly without children and working full-time. All cognitive distortions and motivations, except social motivation, distinguished significantly gamblers according to the intensity of gambling ($p < .05$). The erroneous beliefs and motivations thus increased significantly depending on the presence of problem gambling. Motivations were strongly and significantly correlated with cognitive distortions ($r = .59$, $p < .05$), but they were also both correlated to problem gambling (respectively $r = .47$ and $r = .48$, $p < .05$). Gambling motives explain 35% of cognitive distortions present in our sample of men gamblers ($p = .012$, $p < .05$). **Discussion:** The results show the specific profile of gamblers in terms of socio-demographic characteristics. However, our sample was mostly composed of poker gamblers, for which previous studies have shown the existence of a particular profile in these gamblers. Both motivations and cognitions seem to be involved in problem gambling, but acting in different ways. This confirms previously published data that gambling motives and cognitive distortions are related to the severity of problem gambling. Nature of cognitive distortions appear different depending on the nature of gambling motives found among gamblers. **Conclusions:** This study opens up new research perspective to better understand mechanisms underlying in gamblers and to have clinical implications in terms of prevention and treatment.

OP-71

Cross Cultural Understanding of Gambling Disorder

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Gambling disorder is a worldwide mental health problem. Although frequently understood as a behavioral addiction, this conceptualization has generated debate. A cross-cultural understanding of gambling disorder may therefore inform a better conceptualization of the behavior which in turn may lead to more effective treatment approaches.

Drawing upon a large database of adults with gambling disorder from the United States and Brazil, this presentation will highlight the clinical differences and similarities in gambling disorder in countries with distinctly different socio-cultural backgrounds.

OP-72

**The Self-Discovery Camp (SDiC) for the treatment of Internet gaming disorder:
Results of short-term and long-term follow-up studies**

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Background: We launched the Self-Discovery Camp (SDiC) in 2014 to provide young people suffering from Internet gaming disorder (IGD) with special treatment programs. Since then we have run an annual camp spanning 8 nights and 9 days with zero online access, following up with a 3-day camp approximately 3 months later. In 2016 we also conducted a long-term follow-up camp 1–2 years after the original camp. The content of the SDiC and its efficacy will be presented. **Methods:** We recruited 10, 12 and 16 young males with IGD for the camps in 2014, 2015 and 2016, respectively. Programs included individual and group cognitive behavioral therapy, individual counseling, lectures on IGD and family pro-

grams, in addition to ordinary camp programs such as cooking and recreational activities. We measured and compared Internet use/gaming time and scores on the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES), at the beginning of the camp and at the follow-up camp each year and at the long-term follow-up camp. **Results:** Internet gaming time significantly decreased by the follow-up camp, according to the baseline data in each year and at the long-term follow-up camp. However, we obtained mixed results with regard to SOCRATES. **Conclusions:** Although this study is an open trial, with a small subject number, the results suggest that SDiC may be efficacious in the treatment of IGD.

OP-73

Behavioral Indications of Cognitive Disruption in Hypersexuality

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Background and aims: Addictive processes are thought to be the result of a number of underlying cognitive disruptions that influence decision-making. Specifically, it has been suggested that addiction accesses the same neurophysiological mechanisms used by normal reinforcement learning systems. Our aim is to examine the involvement of disruptions in three areas of cognitive control, (1) Shifting reinforcement contingencies, (2) delaying gratification and risk-taking, and (3) stimulus interference. **Methods:** We examined a sample of 242 adult men who had a sexual interest or had engaged in sexual behavior with men. Ninety-three met criteria for hypersexuality. Participants completed three cognitive tasks: a reversal learning task, a delayed discounting task, and a single-trial Stroop. **Results:** We explored both group differences and correlations with the Compulsive Sexual Behavior Inventory obtained by various computational models characterizing responses to these three measures of cognitive control. We found few indications that hypersexuality, either defined by group assign-

ment or by score on the CSBI, was associated with measures of cognitive disruptions that have characterized other forms of addiction. We did find a significant interaction between a Grattan effect on the Stroop and CSBI score in predicting number of sexual encounters over a 90-day period. **Conclusions:** Hypersexuality, at least in MSM, does not appear to be related to the cognitive disruptions found in other addictions, such as cocaine abuse. However, in the presence of high levels of hypersexuality, at least as measured by the CSBI, a failure to moderate behavior due to immediate previous experience does appear related to increased sexual behavior. Thus, the mechanism by which hypersexuality leads to high levels of partnered sex may be through this disruption in moment to moment modification of behavior. Our findings are influenced by sampling in that hypersexuality manifests itself differently in MSM. Additionally, hypersexuality is multi-dimensional, and it may be that different behaviors result from multiple sources of disruption, which were masked by our group assignment.

OP-74

Relations of cue-specific executive and inhibitory control with tendency towards Internet-communication disorder

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Background and aims: Recent theoretical models argue that executive and inhibitory control functions contribute to the development and maintenance of specific Internet-use disorders, e.g. Internet-gaming disorder, which is comparable to what is known about substance-related addictions (e.g. Brand et al., 2016). Most studies to date, which used Go/No-Go paradigms for measuring inhibitory control, used neutral stimuli, although including addiction-related stimuli may produce more informative results. For example, a study using a gaming-specific Go/No-Go task reported cue-related reductions of inhibitory control for individuals with Internet-gaming disorder (Yao et al., 2015). The current study aimed at investigating the role of executive functions and cue-specific inhibitory control using a modified Go/No-Go task in the context of Internet-communication disorder. **Methods:** All participants in an analogue sample ($N = 314$, mean age 22.5, $SD = 5.3$) performed an auditory Go/No-Go task including both neutral stimuli (e.g. sound of snapping scissors) and specific stimuli in terms of sounds representative for popular Internet-

communication applications. Additionally, participants performed further executive tasks, e.g. the Modified Card Sorting Test (MCST), and filled out the short Internet Addiction Test specified for Internet-communication applications (s-IAT-com). **Results:** We found that weak performance on the MCST was predictive of high s-IAT-com scores. Cue-related performance on the Go/No-Go task moderated this effect in a way that individuals who additionally showed less correct reactions to communication-related auditory stimuli showed highest s-IAT-com scores. We observed no moderating effect of Go/No-Go performance regarding neutral stimuli. **Conclusions:** The results of our study provide evidence that reductions in executive functioning are related to symptoms of an Internet-communication disorder. However, the effect of executive functions may at least partly depend on how accurately people react to addiction-related stimuli. Future studies should focus on possible moderating effects of general as well as cue-related cognitive functioning when investigating specific Internet-use disorders.

OP-75

“The National Programme Counteracting Gambling and Behavioural Addictions” in Poland (2009–2016)

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Up to 2009 medical and psychological problems of gambling and other behavioural addictions had marginal position in public health policy in Poland. In 2009 new law was stated, counteracting gambling problems with a special fund (3% of incomes from taxes from gambling – ca 5 mln EUR). Since then there is a possibility for financing actions against gambling and other behavioral addictions, such as: psychoeducational and informational activities, development of new preventive and problems solving methods, support for insti-

tutions and NGOs realized actions against problems caused by behavioural addictions, increase of quality and quantity of preventive and therapeutical programs (incl. improvement of professional competencies). There were 16 grants competitions provided. From 1600 applications 640 were accepted. About 11,5 mln EUR were spent. Money was divided for research (10%), improvement of prevention and treatment programs (22%), prevention (7%), education and information (14%), and solving gambling problems (47%).

OP-76

Risk for exercise dependence, eating disorder pathology, alcohol use disorder and addictive behaviors among clients of fitness centers

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Background and aims: Exercise dependence (EXD) is considered a behavioral addiction that is often associated with eating disorders. To date, only few studies examined the potential overlap between EXD and other addictive behav-

iors. Therefore, the present study aimed at investigating the relationship of EXD with pathological buying, pathological video gaming (offline and online), hypersexual behavior, and alcohol use disorder in a sample of clients of fitness

centers. *Methods:* The following questionnaires were answered by 128 individuals (age $M = 26.5$, $SD = 6.7$ years; 71.7% men, 74.2% university students): Exercise Dependence Scale, Eating Disorder Examination-Questionnaire, Compulsive Buying Scale, Pathological Computer-Gaming Scale, Hypersexual Behavior Inventory, and Alcohol Use Disorders Identification Test (AUDIT). *Results:* 7.8% of the sample were at-risk for EXD, 10.9% reported eating disorder pathology, 2.3% pathological buying, 3.1% hypersexual behavior and none of the participants suffered from pathological video gaming. The criteria for severe alcohol disorder pathology (AUDIT ≥ 16) were fulfilled by 10.2%. With regard to continuous symptom scores, EXD symp-

toms were positively correlated with both eating disorder pathology and pathological buying but not with pathological video gaming, hypersexuality or alcohol use disorder. It is noteworthy that more symptoms of pathological buying corresponded with more symptoms of hypersexual behavior. The correlation pattern did not differ by gender. *Discussion:* The co-occurrence of EXD, pathological buying and hypersexual behavior on a subclinical level or in the early stage of the disorders should be taken into account when assessing and treating patients. More research is warranted in order to investigate possible interactions between these conditions.

OP-77

Associations between psychosocial maladjustment and internet addiction among adolescents

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Background and aims: Especially among adolescents high rates of excessive and addictive usage patterns of the internet have been reported. Research has also shown that adolescents meeting criteria for internet addiction show decreased psychological well-being, heightened psychopathological symptoms, and decreased psychosocial functioning. However, the underlying reasons for the susceptibility of minors for internet addiction are not fully understood yet, although some hypotheses emphasizing the role of general and specific risk factors have been posed. *Methods:* Based on a representative sample of $n = 1489$ German adolescents aged 12 to 16 years we aimed to confirm prior findings that high neuroticism and low conscientiousness (Brief Personality Inventory) are related to internet addiction. We also investigated if critical life events and associated symptoms of adjustment disorder (Adjustment

Disorder-New Module) were predicting internet addiction. *Results:* The prevalence for internet addiction amounted to 2.5%. Critical life events were reported by 70% of those adolescents with internet addiction and symptoms of adjustment disorders were more pronounced among this group. The inter-correlation between neuroticism and adjustment disorders was exacerbating the risk for internet addiction while reverse associations were found for high conscientiousness. *Conclusions:* Dysfunctional coping strategies seem to play a crucial role in internet addiction and these effects seem to be partly depending on personality factors. In combination with critical life events neuroticism might act as a risk factor and conscientiousness as a protective factor. This stresses the importance of enhancing stress management skills as a prevention and intervention strategy.

OP-78

Just-in-Time Adaptive Interventions: Opportunities and challenges in the context of behavioural addictions

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Background and aims: The use of smartphones to prevent and support the treatment of behavioral addictions and other chronic disorders is increasing rapidly. Mobile and wearable devices facilitate the delivery of Just-In-Time Adaptive Interventions (JITAI) – an intervention design in which the timing and type of support are adapted over time to address rapid changes in an individual's state and context. More specifically, JITAI operationalize the personalization of the real time selection, and real time delivery, of intervention options based on real time assessments (e.g. just-in-time personalized medicine). Despite the potential

of the JITAI approach, most current empirical evidence and scientific models fail to provide the dynamic theory necessary for guiding when and how to provide interventions so as to support the prevention and/or treatment of behavioral addictions. Our goal is to review the key elements of JITAI, clarify their scientific motivation, and discuss challenges and opportunities in the design of these interventions. *Methods:* An example of a stress-management JITAI – Sense2stop – will be used to guide the discussion. Stress plays an important role in many behavioral addictions; for example, stress experiences were found to trigger unhealthy

eating (e.g., Lobel et al., 2008), gambling urges (Elman et al., 2010) online gaming (Hussain & Griffiths, 2009), and excessive or dysfunctional use of mobile phones (Augner, & 2012). Currently under development (as part of MD2K – a NIH funded center of excellence for big data computing in the biomedical sciences; U54-EB-020404), Sense2stop uses a collection of wearable sensors to monitor stress episodes continuously as people go about their daily lives. This information is used to inform the real-time delivery (via a mobile device) of recommendations to engage in a brief stress-regulation exercise. The goal is to help individuals regulate real-time experiences of stress in order to prevent stress-induced behavioral lapses. Open scientific questions concerning the development of this JITAI will be reviewed, and directions for future research aiming to advance the science of JITAI for supporting stress management in the context of behavioral addictions will be discussed. *Conclusions:* As we enter a new era of technological

capacity for delivering JITAI, it is critical that researchers in the area of behavioral addictions develop sophisticated and nuanced theories capable of guiding the construction of such interventions. *References:* Lobel, M., Cannella, D. L., Graham, J. E., DeVincent, C., Schneider, J., & Meyer, B. A. (2008). Pregnancy-specific stress, prenatal health behaviors, and birth outcomes. *Health Psychology*, 27(5), 604. Elman, I., Tschibelu, E., & Borsook, D. (2010). Psychosocial stress and its relationship to gambling urges in individuals with pathological gambling. *The American Journal on Addictions*, 19(4), 332-339. Hussain, Z., & Griffiths, M. D. (2009). The attitudes, feelings, and experiences of online gamers: a qualitative analysis. *CyberPsychology & Behavior*, 12(6), 747-753. Augner, C., & Hacker, G. W. (2012). Associations between problematic mobile phone use and psychological parameters in young adults. *International Journal of Public Health*, 57(2), 437-441.

OP-79

Abnormal corticolimbic functional connectivity underlies mood-related impulsivity in gambling disorder

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Background & Aims: One of the most clinically relevant characteristics related to affective deregulation in gambling disorder patients (GDPs) is the tendency to act impulsively under negative emotions (*Negative Urgency*, NU); which associates to disorder severity and poor prognosis. This study aimed to investigate the association between NU and functional connectivity (FC) of the amygdala, a core hub in corticolimbic emotional processing networks. *Methods:* Twenty-four treatment-seeking GDPs and 25 matched healthy controls (HCs), underwent a resting-state functional Magnetic Resonance Imaging session and were assessed in NU using the UPPS-P impulsivity scale. An independent full-factorial design was performed to assess between-group differences in the correlations of FC maps of the amygdala with NU, controlling for the presence of dys-

phoric mood and anxiety. *Results:* The association between NU and FC of the amygdala with the caudate, putamen, insula and left ventrolateral prefrontal cortex significantly varied across groups (with positive NU-connectivity associations in GDPs, and negative ones in HCs). The opposite pattern was observed for the premotor and postcentral gyri, the supplemental motor area, the posterior cingulate cortex and parieto-occipital areas (with negative NU-connectivity associations in GDPs, and positive ones in HCs). *Conclusions:* In gambling disorder patients, NU is linked to a distinctive altered pattern of FC between limbic and frontoparietal regions implied in emotional generation and regulation processes. This pattern of FC alterations may contribute to hamper top-down distress regulation in gambling disorder.

OP-80

Behavioral patterns and perceptions relating to body modification in Israel: Tattoos, piercings, and sub-dermal implants

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Background and aims: Limited research attention has been given to body modification in Israel: tattoos, piercings, and sub-dermal implants. The objective of this study is to examine this growing trend: Social patterns, attitudes and

knowledge of health risks associated with the execution of body modifications. *Methods:* A structured, self-reported and quantitative questionnaire was given to 921 participants: 53% females. Mean age: 35 (SD = 10.8). *Results:*

crafting body modifications: 44% of the subjects carried some sort of body modification, while the ethnic group with the highest prevalence of having body modification is Eastern European/Russian (57%), and the lowest is Arab-Israelis (17%). Most subjects reported health risks are known to them (81%), and acknowledged that not all venues providing body modification procedures are safe in terms of health and hygiene (91%). More than half of the participants knew of infectious inflammations as a possible health complication (60%), HIV infections (55%), aseptic inflammation (44%), and bleeding or hematoma (40%). Less than half of the subjects, (46%) reported of receiving information about possible future health risks – before undergoing body modification. Females knew to report of health complications, notably more frequently than males,

as a result of body modification procedure. *The main motivations for undergoing body modifications:* “Fashion” (45%), and “self-distinction from others” (40%). Most of participants believe that, overall, Israeli society accepts the phenomena of tattoos (89%) and body piercing (86%). However, females reported a higher frequency of negative social reactions to body modification, while males reported a higher prevalence of positive social responses. *Conclusions:* Developing a targeted informational-preventative body through the Ministry of Health focused on young people, dealing with the context of the health risks and illegality of body modification, while paying special attention to teenage boys. In addition, formulating policies and legislation regarding body modification, similar to legislations that are implemented in other countries is necessary.

OP-81

Neurophysiological indicators of Internet gaming addiction in resting state electroencephalography

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Background and aims: Internet gaming addiction is emerging as a serious social problem worldwide, especially in Korea. A previous study has compared resting state electroencephalography (EEG) between healthy control (HC) and internet gaming disorder (IGD) groups (Choi et al., 2013). There have also been study comparing quantitative EEG (qEEG) between HC, IGD, and alcohol-use disorder groups (Son et al., 2015). However, studies investigating qEEG indicators of Internet gaming addiction are sparse. Utilizing qEEG features, we aimed to elucidate neurophysiological indicators of Internet gaming addiction by comparing resting state EEG signals before and after exposure to Internet game videos. *Methods:* Twenty late-adolescent males (19–22 years of age) were administered the Internet Addiction Test (IAT) (Young, 1996). Participant IAT scores ranged from 23 to 76, and the mean and standard deviation were 49.55 ± 16.83 . Eye-open, resting 64-channel EEG was recorded during 5 min before and after 35 min exposure to Internet game videos. The relationship between IAT scores and qEEG features (absolute/relative power for delta [1–4 Hz], theta [5–7 Hz], alpha [8–12 Hz], beta [13–30 Hz], and gamma [31–50 Hz] frequency bands, and the delta/alpha, [delta + theta]/[alpha + beta], theta/alpha, and theta/beta ratios) were analyzed by partial correlation analysis, adjusted for age. *Results:* The association between qEEG indices and IAT was dependent on exposure to Internet game videos. Prior to exposure, absolute beta power of the frontal and centro-parietal areas in the right hemisphere showed positive correlations with IAT scores ($p < 0.05$). However, this

relationship shifted to the frontal and left centro-parietal areas after exposure to Internet game videos. Moreover, absolute gamma power in the right frontal area showed a positive correlation, and the theta/beta ratio in the prefrontal area showed a negative correlation with IAT scores (all $p < 0.05$). In a previous study, which compared eye-closed, resting EEG between IGD and HC groups, beta power in the IGD group was lower than that in the HC group (Choi et al., 2013). This conflicting result to the present study may be due to study differences in having the eye open vs. the eyes closed during EEG testing. However, our finding of positive gamma correlations is similar to that of previous reports (Choi et al., 2013). It has been shown that the theta/beta ratio is related to the effects of stress on state attentional control (Putman, 2014), and that the theta/beta ratio in the prefrontal area is negatively correlated with scores on the Attention Control Scale, similar to the current findings. Therefore, we expect participants with a higher degree of Internet gaming addiction to experience greater stress after exposure to Internet game videos. *Conclusions:* The current study found resting state EEG indicators of Internet gaming addiction, and that the relationship between qEEG and Internet gaming addiction depends on exposure to Internet game videos. Absolute beta and gamma power, and the theta/beta ratio, are important indicators of the degree of Internet gaming addiction. The use of qEEG may be beneficial to assess the effectiveness of Internet gaming addiction treatment.

OP-82

Can structural characteristics of electronic gaming machines (egms) reduce cognitive control with a gambling session: Implications for problem gambling interventions?

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Background and aims: In order to respond adaptively to losing within a gambling session, via paying attention to relevant punishment cues whilst inhibiting arousal and emotional urges, an individual must apply cognitive control. Problem gambling is often categorised as a disorder that is caused by pre-existing deficiencies in cognitive control. This study investigated whether the cognitive control of an Electronic Gambling Machine (EGM) player could be affected in the short term by the structural features of the game, namely the size of stake permitted. *Methods:* In a repeated measures experiment, 32 adult frequent gamblers were required to gamble at high stakes, low stakes and no stakes, and the effect on cognitive control, via Response Inhibition and Reflection Impulsivity

performance, was observed. *Results:* Although stake size variation did not affect Response Inhibition performance, the quality of decision-making (*in terms of* Reflection Impulsivity) did significantly reduce when the participants were gambling in the higher stakes condition. These findings provide support for the proposition that structural characteristics of gambling activities can impact executive functioning relevant to cognitive control in gambling contexts. *Conclusions:* These findings indicate that the opportunity for participants to increase stake size on a gambling activity, as a structural characteristic, may be a risk factor for impaired cognitive performance when gambling, potentially creating vulnerability for within-session loss-chasing in some players.

OP-83

Craving responses to watching pornographic clips are related to symptoms of Internet-pornography-viewing disorder

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Background and aims: Cue-Reactivity and craving reactions are important aspects in the development of substance-use disorders. Since it has been suggested that both processes are also involved in Internet-pornography-viewing disorder (IPD), it is important to investigate them in more detail. Some authors consider the anticipation of gratification as key factor in the development and maintenance of an IPD. In the I-PACE (Interaction of Person-Affect-Cognition-Execution) model for specific Internet-use disorders (Brand et al., 2016), cue reactivity and craving as well as reward-learning mechanisms are assumed to be crucial mechanisms of an IPD. In former cue-reactivity studies mostly pornographic pictures were used for induction of sexual arousal and craving. The aim of the current study was to investigate the effects of pornographic clips on subjective craving and relationships with specific cognitions about Internet-pornography-viewing and tendencies towards IPD. *Methods:* An experimental study with a sample of 51 male participants was conducted. All participants

viewed 60 pornographic clips, rated them with respect to sexual arousal and indicated their current sexual arousal and their need to masturbate before and after the cue presentation. Furthermore, questionnaires were used to assess motives for viewing pornography, Internet-pornography-use expectancies and tendencies towards IPD. *Results:* The pornographic clips were rated as sexually arousing and lead to an increase of sexual arousal and the need to masturbate. Moreover, sexual arousal reactions were moderately to strongly associated with expectancies and motives to view Internet-pornography as well as with symptoms of IPD. *Conclusions:* The results are consistent with former studies on IPD and emphasize the involvement of cue-reactivity and craving in IPD as suggested in the I-PACE model for specific Internet-use disorders. From a methodically view, the observed effects of the cue-reactivity paradigm with pornographic clips are comparable to those reported when pictures were used as cues.

OP-84

Internet addiction among methadone maintenance treatment patients

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Background and aims: As drug addicts show vulnerability and predisposition to addictive behaviors [1], and Internet addiction was found to be related to depression [2], we evaluated internet addiction and depression among methadone maintenance treatment (MMT) patient. **Methods:** A non-selective sample of patients from Las Vegas (LV) MMT clinic (N = 166) were compared with a random sample (N = 71) from Tel Aviv (TA) MMT clinic, using Internet Addiction Test (IAT) questionnaire, and the CES-D questionnaire for depression. Observed and random urine tests for drugs (opiates, cocaine metabolite (benzoylecgonine), benzodiazepines, cannabis, and methylphenidate) at the month prior to study evaluation were done and positive result defined if at least one of the tests was positive. Demographic and addiction history were taken from patients' chart. **Results:** None defined with internet addiction (IAT scored ≥ 80), 3 patients (1.8%) from LV and 3 (4.2%) from TA defined as "occasional frequent problem due to internet" (scored 50–79), while 38 (22.9%) from LV and 34 (47.9%) from TA were not "exposed" to internet at all ($p < 0.0005$). Logistic regression model found LV as compared to TA patients as being more cannabis abusers (Odds Ratio (OR) = 36.4 95% Confidence Interval (CI) 2–652.8), treating for shorter duration in MMT (OR = 0.7, 95% CI 0.56–0.79), more female (OR = 5.0, 95% CI 1.4–17.8), more depressed (OR = 1.07, 95% CI 1.0–1.1), older age (OR = 1.1, 95% CI 1–1.1) and more educated (OR = 2.4, 95% CI 1.7–3.4). Logistic regression model between the "non-exposed" to the "exposed" in TA

characterized them as older age (OR = 1.1, 95% CI 1–1.2), and most likely methylphenidate abusers (OR = 10.9, 95% CI 1.1–103). In LV the non-exposed characterized as benzodiazepine abusers (OR = 4.0, 95% CI 1.5–10), being positive antibody to hepatitis C (OR = 4.3, 95% CI 1.7–10.7), and less educated (OR = 0.7, 95% CI 0.6–1.0). Mean IAT score was higher among male (19.7 ± 14.8 vs. 14.8 ± 12.4 , $p = 0.03$). IAT and CES-D correlated ($R = 0.2$, $p = 0.04$). The 6 patients who defined as "occasional frequent problem due to internet" as compared to all other patients were older (53.0 ± 5.6 vs. 41.5 ± 2.8 , $p = 0.03$) with longer duration in MMT (8.7 ± 7.7 vs. 3.4 ± 4.6 , $p = 0.008$), and as a trend of less education years (10.5 ± 1.6 vs. 11.6 ± 1.9 , $p = 0.1$) with higher CES-D score (22.7 ± 7.1 vs. 17.9 ± 10.5 , $p = 0.2$). **Conclusions:** Not like other addiction behavior such as pathological gambling that we already found as prevalent among MMT patients [3], the internet addiction was found to be rare among former opiate addicts, current MMT patients. These finding were consistent in the two clinics despite TA and LV clinics differed in several characteristics. Both clinics had a high prevalence of patients who were "non-exposed" to internet. The non-exposed group characterized as older, less educated, with more risky behavior and abuse of non-prescription drugs (benzodiazepine, methylphenidate). We conclude that education about internet use is more relevant and needed for the MMT patients population. A specific intervention, that may include treatment for depression, is needed to the rare internet addicts.

OP-85

Behavioral addictions among abstinent substance abusers in halfway houses: The emergence of new clinical challenges and ways forward

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Behavioral addictions among men recovering from substance use disorders (SUD) is under-assessed yet they can affect quality of life, including economic impact (e.g., gambling, excessive buying), relationships (e.g., workaholism, hypersexuality, internet), physical health (e.g., food addiction, self-injury), and general mental health. A major challenge facing many individuals attempting to abstain from substances following residential SUD treatment completion is finding a stable living environment that supports sustained recovery. Transition to a halfway house, a novel therapeutic framework, requires further ad-

aptation and triggers crises that increase treatment drop-outs and relapse to the original addiction or to a new one. The current paper offers a preliminary glimpse into clinical manifestations of various behavioral addictions found in several drug-free halfway houses in Israel. Modified SUD treatment strategies, including specific skills training, group based interventions and individual therapy that has been expanded and adapted for use with behavioral addictions in abstinent substance abusers are discussed, as well as possible theoretical mechanisms and policy implications.

OP-86

Findings from a multi-technological addictions study amongst school-aged Portuguese adolescents

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Background and aims: Previous small-scale studies in Portugal suggested that a minority of adolescents could be at risk for developing technological addictions such as Internet addiction (IA) and Internet Gaming Disorder (IGD). However, these findings are still to be replicated by larger studies using more robust samples. In light of this, the present aimed to ascertain how IA, IGD, and Facebook addiction (FA) may impact on Portuguese school-aged adolescents' mental health. **Methods:** A total of 509 school-aged adolescents were recruited ($M_{age} = 13$ years; $S.D. = 1.64$ years) to a multi-technological addictions project. Data were collected on participants' sociodemographic, IA, IGD, FA, and several psychiatric symptoms. **Results:** Overall, the

incidence of technological addictions was not overly prevalent across the sample (0% IA; 1% IGD; 1.8% FA), and a small minority of adolescents appeared to be 'at-risk' for developing technological addictions (1.6% IA; 0.6% IGD; 2.4% FA). Finally, increased symptoms of depression, anxiety, and stress were found to be consistently associated with augmented symptomatology of technological addictions. **Conclusions:** The findings of the present study provided preliminarily insights into how technological addictions may affect Portuguese school-aged adolescents, and corroborated a large body of international studies that found systematic links between technological addictions and psychiatric comorbidities.

OP-87

How might compulsive sexual behaviors be considered in ICD-11 and what are the clinical implications?

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Background and aims: Although prevalence estimates are largely lacking, a considerable number of individuals may encounter problems with various forms of problematic sexual behaviors related to hypersexuality, problematic pornography viewing or compulsive sexual behaviors. In preparation for the fifth edition of the Diagnostic and Statistical Manual (DSM-5), hypersexual disorder was field-tested and considered for inclusion but was ultimately excluded from the manual. In preparation for the eleventh edition of the International Classification of Diseases (ICD-11), non-substance or behavioral addictions are being considered for inclusion, with questions regarding definitions and classifications being discussed. **Methods:** The obsessive-compulsive and related disorders group and the substance use disorders group have considered behavioral addictions including those relating to sex. Three work-group meetings organized by the World Health Organization have considered Internet-related behaviors and disorders, with consideration of both online and offline behaviors with addictive potential. In these meetings, international participation from the majority of the World Health Organization's global zones participated to help ensure that global jurisdictions were well represented and involved in the process of considering how best to conceptualize and define behavioral addictions and related sub-

syndromal behaviors. **Results:** The obsessive-compulsive and related disorders group has reported an opinion that compulsive sexual behaviors be recognized as a specific diagnostic entity in the impulse control disorder section. The addictive disorders group in ICD-11 has proposed criteria for gambling disorder and gaming disorder, with both online and offline specifiers. Related definitions for hazardous gambling and gaming have been proposed, with these definitions being mutually exclusive from the corresponding disorder conditions. While no specific behavioral addiction related to sexual behaviors has been proposed, a category for "Disorders Due to Addictive Behaviors" has been proposed, and this designation may be used to diagnose behavioral addictions related to sex. **Conclusions:** Although the ICD-11 process is not yet finalized, problematic, compulsive, excessive and/or hypersexual behaviors relating to sex are being discussed with respect to inclusion in ICD-11. A currently proposed diagnostic category by the addictive disorders group would permit clinicians to have a diagnosis for a broad range of addictive behaviors relating to sex. Given the use of the ICD by a large number of groups including many clinicians and insurance companies, the existence of a diagnostic entity capturing addictive behaviors relating to sex may have significant clinical and public health impacts.

OP-88

Treatment of obesity using behavioral addiction methods: a pilot study

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Background and aims: New treatment strategies for obesity are urgently needed. Mounting evidence suggests that out-of-control overeating may involve an addictive process. Nevertheless, neuroscience data implicating substance addiction to food constituents is inconsistent. On the other hand, uncontrollable “comfort eating” and “nervous eating” resemble behavioral addictions, e.g. pathological gambling and body focused repetitive behaviors (onychophagia, skin picking, trichotillomania, nervous tics). The brain tends to adopt (hijack?) any behavior that relieves stress, in this case eating. Behavioral addiction treatment methods may prove useful for obesity intervention. **Methods:** An obesity intervention was developed using behavioral addiction treatment methods and implemented as a smartphone app. Participants were recruited from newspaper and radio advertisements. The 4 month intervention included weekly phone calls and 4 group meetings. First, participants withdrew from specific, craved “problem” foods by abstinence from each food using aversive counter stimuli (foul images and smells) until cravings resolved. Next, participants withdrew from non-specific snacking using distractions (going outside), trigger avoidance (boredom prevention, avoiding the kitchen), alternative behaviors (squeezing hands), distress tolerance (urge surfing), relaxation techniques (deep breaths), stress management (journaling, problem solving), and keeping busy while watching TV. Lastly, participants withdrew from excessive home meal portion sizes using trigger avoidance (additional food out of sight) and weighing typical portions on an app-interfaced kitchen scale with small, incremental, app-controlled portion reductions. At program completion participants were offered the opportunity to take part in a 5 month extension study continuing the same approach but without the app. Questionnaires examining struggles and reasons for overeating were adminis-

tered to parents and children at group meetings and in weekly, recorded phone interviews at baseline, program completion, and at the conclusion of the extension study. Heights and weights were assessed at four time points with a further two assessments for participants in the extension study. BMI z-score (zBMI) derived from CDC growth charts was the primary outcome. The data were analyzed using Stata and Mplus (LGM : latent growth models). **Results:** Thirty-five participants (boys: 17; girls: 18) with ages ranging from 8–20 (mean 13.7, SD 3.0), mean BMI 32.4, mean BMI z-score 2.17 were recruited. Twenty-four participants (69%) completed the program and 17 (49%) took part in the extension study. Participants who completed the program lost on average 4.9kg. A latent growth model of zBMI for participants who completed the program had a mean zBMI intercept (baseline) of 2.21 and a negative slope of -0.29 zBMI units (representing the change over the initial 4 month intervention, $p < 0.01$). A positive correlation between intercept and slope factors indicated higher zBMI scores at baseline were associated with poorer weight loss. For the 17 participants taking part in the extension study on average a further 2.6 kg was lost and the average zBMI change slope was -0.57 (over the entire 9 months, $p < 0.01$). Seven (7) parents and 19 children reported struggles involving food withdrawal symptoms and loss of a major coping mechanism (overeating). Reported reasons for overeating, in order of prevalence, included: boredom, pleasure seeking, life stresses, conflict to eat or not eat a food, sadness, social pressure, trigger of food in sight, feelings of missing out, familiarity, and repetitive thoughts of food that they could not shake. Overeating significantly improved as the study progressed. **Conclusions:** This study provides preliminary evidence for the utility of behavioral addiction methods for treatment of obesity, specifically in young people.

OP-89

Women & problem gambling in Italy; still a hidden addiction?

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The problem of gambling in women is an invisible addiction, according to a few data collected at gambling clinics in Italy. However, it's a highly growing problem, due to both the economic crisis and the attraction, well supported by suitable advertisement, that new forms of gambling have on our female population. The Italian gambling landscape is rapidly changing, with even the increase of *online* gambling particularly targeted towards young women. Our activity

focuses now on Italian women with gambling addiction, on their difficulties in seeking help, and on how this female dependence may affect research interest in our country. In this context, we will present clinical reflections on domestic violence and gambling problem in the population of women, underlining the apparently “positive” coping role of gambling supporting the past and present experience of suffering and exploring the most useful techniques to deal with

it. We will start from our *gender* group pilot experience facing a number of themes such as the systemic relational integrative approach, the use of video and specific DBT clinical tools in working on past violence and trauma, guilty feelings and repairing experiences. Subsequently, we will call attention to the difficulty in treatment search and to the

role of family dynamics in woman's therapy approach, treatment retention and outcome. We aim to provide new relevant hints to future investigations through emphasis on both the innovative clinical approaches and the prevention paths, dedicated and specifically developed for those women with gambling problem.

OP-90

Problem gambling in women: An international female perspective on treatment and research

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This session will present book published in December 2016 entitled "Problem Gambling in Women: An International Female Perspective on Treatment and Research" edited by Prof. Henrietta Bowden-Jones and Dr. Fulvia Prever. Historically, gambling has been perceived as a male domain, where women gamblers are seen as immoral and violators of gender expectations. In recent decades, however, the social legitimacy of gambling has grown, and so, too, has the number of women who are either exposed to gambling, actively gamble or have gambling-related problems and are treated for it. Research on women with gambling disorders has focused mainly on the differences between women and men in terms of patterns of gambling behavior, its causes, and the extent to which it is accompanied by mental disorders. However, little attention in the gambling field has

been paid to one of the main issues; namely women's difficulty in seeking treatment or getting appropriate treatment relating their gambling problems. To make research on these issues more easily available, this book brings together experimental studies and different treatment approaches from a global perspective, with the aim of better informing clinicians of cutting edge work being done on the subject. Each chapter deals with a specific issue such as the motherhood of women with gambling problems, experiences of past violence and gambling as coping strategy, risk and protective factors, help seeking, etc. This session will include an overview of the book itself, and short presentations by roughly 5 researchers whose chapters are included in the book.

OP-91

Effects of social exclusion and losing a bet on economic decision making in social gamblers

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Background and aims: Among gamblers, social rejection and hostile responses to losses act as major barriers to disclosure and help-seeking. Ostracism is a form of social control used to influence group members that are perceived as burdensome. Yet, lack of perceived interpersonal justice has been linked to retaliatory and risky behaviors, emotional pain and feeling of disrespect. Negative emotions had been previously found to affect economic decision-making. The present study tested the combined effects of being ostracized and losing a bet on fairness sensitivity in economic decision-making. **Methods:** Undergraduate students ($N = 81$) were randomized to experience either pre-programmed wins or losses in a computerized gambling task. Feelings of being included or excluded were manipulated using Cyberball. Participants subsequently played the ultimatum game (UG), first as responders, assessing fair

and unfair monetary offers, and then as proposers. **Results:** Excluded participants that experienced losses decided to accept and to allocate more unequal but personally beneficial monetary offers during the UG, as compared to excluded winners, and to participants that experienced losses or winnings but were included. **Conclusions:** Rejected losers display reduced unfairness sensitivity in economic decision-making, thus avoiding the evolutionary-based mechanism of reciprocal altruism that depends upon punishing non-cooperators even if this punishment is costly to the self. These findings suggest that while social cognition and aversion to harming others and self were compromised in rejected losers, deliberative reasoning capacity remained intact. The current study provides insight into mechanisms that shape fairness considerations and utility maximization in social gamblers' economic decision-making.

OP-92

Trichotillomania and skin picking disorder: Clinical update

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Trichotillomania and skin picking disorder, characterized by the repetitive pulling out of one's own hair or picking at one's skin, have been documented in the medical literature since the 19th century, but have received scant research attention. Although recently grouped with OCD in the DSM-5, clinicians need to be aware that trichotillomania and OCD may have less in common than originally thought. In fact, approaches to treating trichotillomania,

which include habit reversal therapy and medication (n-acetyl cysteine or olanzapine), are quite different from those used to treat OCD; and some first-line treatments used for OCD appear ineffective for trichotillomania. This presentation will discuss the clinical presentation and neurocognitive underpinnings of these disorders, their relationships to OCD and behavioral addictions, and finally discuss treatment options.

OP-93

Contribution of different diagnostic criteria to the assessment of Internet Gaming Disorder as defined by the DSM-5

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Background and aims: Internet gaming disorder (IGD) was listed in Section 3 of the DSM-5 as a condition for further study. The inclusion was intended to stimulate further research on this condition to determine if it should be classified as a unique mental disorder (Petry, Rehbein, Ko, & O'Brien, 2015). The DSM-5 proposed nine criteria, representing an important first step for standardized classification (Petry et al., 2014). Many of these criteria were adapted from substance use and gambling disorder, but further research is needed to ascertain their validity and reliability in the context of gaming. *Methods:* A literature search was conducted to identify studies evaluating the DSM-5 IGD

criteria in representative samples since publication of the DSM-5. The state of research gives first insight into the prevalence and diagnostic contribution of the respective criteria. *Results:* Most of the proposed DSM-5 IGD-criteria seem to be well suited for differentiating pathological from non-pathological gaming. However, the criterion 'escape adverse moods' has a considerable lower predictive power among studies. *Conclusions:* DSM-5 IGD provides a suitable framework for comparing the results of different studies regarding the applicability of different diagnostic criteria of gaming related problems. These results should also inform ICD-11.

OP-94

Policy guidelines of situational prevention measures in internet related disorders: Results of a German expert group commissioned by the Federal Ministry of Health.

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Background and aims: Situational prevention measures are regarded as highly relevant in preventing substance as well as gambling related disorders. In contrast, regarding internet related disorders, major initiatives of situational prevention have not been implemented in most countries yet and little is known about what specific strategies might prove effective. *Methods:* In Germany, the Federal Ministry of Health commissioned an expert group of researchers and health care stakeholders to develop guidelines to address issues and risks involved with internet use and gaming. The group held consecutive personal meetings and telephone conferences from February to June 2016 and

considered available literature. *Results:* The work resulted in policy guidelines referring to the situational prevention subtopics 'protection of minors', 'external restriction of gaming and internet use', 'self-restriction of gaming and internet use', 'risk reduction via changes in product design', 'restrictions on advertisement' and 'environmental regulations'. However, implementability and efficacy of these measures must be ascertained in future studies. *Conclusions:* Situational prevention should be considered to address public health issues related to internet related disorders in the future and might strengthen behavioral related prevention.

OP-95

A meta-analysis of inhibition abilities in disorders with impulsivity issues

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Background and aims: Literature has shown that the mental disorders with most impairments in inhibition are those with impulsivity issues. Disorders included in this category include attention deficit hyperactivity disorder (ADHD), binge-purging disorder, bipolar disorder, borderline personality disorder (BPD), non-suicidal self injury (NSSI), obsessive compulsive disorder (OCD), schizophrenia, and substance use disorder (SUD). Researchers have tried to investigate these impairments through various neuropsychological tests that measure inhibition, such as the stop-signal test, go-no-go test, and the continuous performance test (CPT). **Methods:** Taking this into consideration, we conducted a meta-analysis looking at the differences in the aforementioned impulse-related disorders in inhibition in

the three neuropsychological tests. Moderator variables such as gender, age, and clinical status (i.e., co-morbidity and global assessment of functioning (GAF) score) were also assessed. **Results:** The results revealed the largest impairments in inhibition were in schizophrenia followed by substance use disorder. Medium impairments were seen in ADHD, BPD, OCD, and Bipolar. All others were not statistically significant. Differences among tests also existed. Moderator analyses showed that males with mental health issues more impaired in inhibition than woman. **Conclusions:** These outcomes point to the trans-diagnostic importance of impaired impulsivity and inhibition relationships and to the need of new clinical interventions that target such problems.

OP-96

Proneness to smartphone addiction, Internet addiction, and approaches to learning

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Background and aims: Studies have reported negative relationships between academic outcomes, smartphone addiction (Samaha & Hawi, 2016), and Internet addiction (e.g. Chen & Peng, 2008). The relationship between these behavioural addictions and approaches to learning, however, has not been studied. The aim of this study was to investigate these relationships. We hypothesized that learning for understanding (a deep approach to learning) was negatively correlated with proneness to smartphone addiction and Internet addiction; on the other hand, learning for instrumental aims (a surface approach to learning) was hypothesized to correlate positively with proneness to addiction. **Methods:** Four hundred and fifteen university students ($M_{age} = 23.37 \pm 4.19$ years, 78.8% female) participated in an online survey study. The participants

filled out the Estonian Revised Study Process Questionnaire (Valk et al, 2006; based on Biggs, Kember & Leung, 2001), the Internet Addiction Test (IAT; Young, 1998), the Estonian Smartphone Addiction Proneness Scale (E-SAPS18; Rozgonjuk, Rosenvald, Janno & Täht, 2016), and provided information about their social media related activities. **Results:** Analyses showed that both E-SAPS18 and IAT scores were positively related to a surface approach to learning and negatively related to a deep approach to learning. **Conclusions:** This is the first study to show the relationships between measures of proneness to smartphone addiction, Internet addiction, and different approaches to learning. According to the results, the addiction measures could be used to an extent to predict approaches to learning.

OP-97

Early interventions for Internet-related disorders: the iPIN pilot study

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Background and aims: Early intervention approaches have been found to be effective in areas such as alcohol use disorders. However, brief interventions for Internet-related problems are still in its infancies. The aim of this study was to develop brief interventions in this area and to test them in a pilot study. **Methods:** Participants were recruited by

screenings in job agencies using the Compulsive Internet Use Scale (CIUS). A manual for the brief intervention approach was developed. The intervention was based on Motivational Interviewing and elements of Cognitive Behavior Therapy. Participants received a fully structured clinical interview. When fulfilling at least three criteria according to

the DSM-5 approach participants were included into the pilot RCT. *Results:* Of 1,679 screened individuals, 40 were diagnosed as having problematic or pathological Internet use and 36 could be allocated to the intervention or control group by random. In a follow-up after two months, CIUS-

scores were reduced. An r^2 -change of .034 was found suggesting a small to medium effect-size. *Conclusions:* To the best of our knowledge, this is the first trial on brief interventions for Internet-related Disorders. Feasibility could be affirmed, efficacy needs to be confirmed in larger samples.

OP-98

Internet-related disorders: Development of the Short Compulsive Internet Use Scale (Short CIUS)

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Background and aims: Existing screening instruments for Internet-related disorders are often too time-consuming as well as not validated using clinical criteria. The aim of this study is to develop an optimised short screening tool for identifying problematic and pathological Internet use. *Methods:* Two Samples ($N = 3.040$; $N = 1.209$) recruited via systematic pro-active screening have been merged. Regression analysis in random subsamples was conducted to examine the performance of the 14 items of the Compulsive Internet Use Scale (CIUS). Based on the results, a short version of the CIUS was developed and compared to the original CIUS. A fully structured diagnostic interview covering the criteria proposed for Internet gaming disorder

in the DSM-5 but with a broader focus on all Internet activities was performed. Fulfilling at least 3 criteria was used as criterion for problematic and pathological Internet use. *Results:* A five-item version performed best across the samples. Comparing the Area Under the Curve (AUC) of the Receiver Operating Characteristic (ROC) between the Short-CIUS and the original test revealed no significant difference. A cut point of 7 for both gender turned out to perform best for case detection and yielding a sensitivity of .95 and a specificity of .87. Cronbachs Alpha as a measure of reliability was .77. *Conclusions:* The Short CIUS holds potential for being used within the framework of prevention, brief intervention and further research.

OP-99

Internet-addictions in teenagers bullied in the educational environment

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Background and aims: Various forms of violence in the educational environment manifest themselves through addictions formed in victims of violence. *Aims:* studies of Internet communication of teenagers–victims of bullying at school. *Methods:* The research group including teenagers–victims of school violence ($N = 75$, i.e. 39 girls, 36 boys) was selected from the sample group ($N = 172$, mean age 14.8, $SD = 1.2$) after the content analysis of the unfinished-sentence method. Intensity, length and contents of their Internet communication via e-mail, networks, groups and blogs were the primary objects of research. *Results:* (1) 84% of teenagers–victims of school violence manifested signs of Internet addiction, because they spend all their free time and most of their

school time (15–18 hours a day) communicating online, which minimizes their stress and compensates for problems in personal communication. (2) Internet communication is not only communication environment in which teenagers seek understanding and compassion (39.7% of all the cases), but also the place for revenge, aggression, humiliation of those who hurt them (60.3%). (3) Boys usually resort to cyberbullying (obscene language, blackmail, threats) in their Internet wars; girls resort to anonymous trolling (provocations, lies, gossips) ($p \leq 0.002$). *Conclusions:* Violence in the educational environment not only destroys teenagers' psychological health; it results in Internet addiction, aggressive and manipulative communication patterns.

OP-100

Collectible Card Games: Another form of behavioral addiction?

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Background and aims: Collectible Card Games (CCG), such as Magic: the Gathering, Hearthstone, and Pokémon, are played by tens of millions of people around the world

and garner hundreds of millions of dollars in revenue per year. Little is known regarding gameplay characteristics and other factors of CCG players. Further, there are anecdotal

dotal accounts but no empirical research on problematic CCG play. The current study describes characteristics of CCG play in a Canadian sample and reports on potentially problematic aspects of CCG play. *Methods:* Participants who regularly play CCG were recruited from an Online Panel in Canada. Characteristics of CCG play, game types, motivations, and problems associated with CCG play are described. Mental health and related addictive behaviors were also assessed. *Results:* 531 participants completed the survey (mean age 34.17, SD 11.76, 50.9% male). The most commonly played CCGs were Pokémon, Magic: the Gath-

ering, and Hearthstone. A range of involvement is described, including hours devoted to play, hours devoted to related non-play activities (i.e. deck building), tournament participation, and expenditure. Aspects of problematic play and associated variables will be discussed. *Conclusions:* Despite its popularity, CCG play has received little coverage in research literature. Given its growing popularity and its parallels to behavioral addictions (i.e. internet gaming, gambling), further exploration of this activity and population is warranted.

OP-101

Factors distinguishing Problem Gamblers, Problem Video-Gamers, and Dual Problem Gamblers/Video-Gamers

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Background and aims: Previous research compared problem gamblers and problem video game players on personality, psychopathology, and neurocognitive characteristics. However, characteristics of concurrent problem gambling (PG) and problem video gaming (PVG) have not been evaluated. This is important in identifying risk factors for co-morbid involvement in multiple addictive behaviors. *Methods:* Adults were recruited from a Canada-wide online panel. The survey included demographic information, characteristics of gambling and video game play, psychometric instruments on PG and PVG, psychopathology, impulsivity, and related behavioral addictions. 3,942 adults (mean age 43.6, 50.5% female) participated in the survey. 10.6% were classified PG (n = 417), 3.9% were PVG (n = 154), and 1.2% were concurrent problem gamblers and problem video game

players (PG/PVG) (n = 49). *Results:* Multinomial logistic regression – forward stepwise identified demographic, mental health, and addiction variables predictive of PG, PVG, and PG/PVG. Post-hoc univariate analysis showed that, compared to PG, PVG players were younger and had higher rates of depression, social anxiety, and other behavioral addictions. PG had higher rates of substance use disorder and impulsivity than PVG players. Those with dual PG/PVG had higher antisocial characteristics than both groups, and higher impulsivity and substance use disorder than the PVG group. *Conclusions:* PG and PVG demonstrate different patterns of co-morbidity with mental health and substance-related disorders. This appears to be the first study where co-morbid PG and PVG were evaluated, which showed higher antisocial and impulsive characteristics.

OP-102

Effectiveness of self-exclusion: The experiences of female gamblers in three Swiss casinos

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Background and aims: Voluntary exclusion is an agreement between the gambler and the casino, in which the player will not go to the casino for a certain period of time, possibly regaining control over its gambling behaviour. The value of self-exclusion is still debated and in particular requests for renewed exclusions tend to be considered a relapse and a failure of its effectiveness. However this is likely to be closely linked to the manner in which the exclusion is proposed and implemented. This study aims to understand the relationship between voluntary exclusion, as applied in Swiss Casinos, and gambling behaviour, as assessed using the DSM-IV. *Methods:* Participants consisted of 86 female gamblers who applied for and obtained re-admission to the three casinos in Ticino (Mendrisio, Lugano and Locarno) between 2007 and

2014. The data was obtained from voluntary exclusion request forms and from the DSM-IV diagnostic questionnaires filled during the exclusion requests. *Results:* The incidence of problem and pathological gambling was lower among those that have requested two or more voluntary exclusions than those that self-excluded for the first time. The incidence of diagnostic criteria progressively decreased after each readmission. *Conclusions:* Repeated exclusions over time could have a protective function against relapse – which is understood as a return to previous gambling habits – and help develop improved self-control and awareness of one's own gambling behavior. These findings should motivate casinos to increase efforts to promote voluntary exclusion as a mean to maintain and restore controlled gambling.

OP-103

Randomized Efficacy Trial of a Cognitive-Behavioral Intervention to Prevent Internet Use Disorder in Adolescents – Preliminary Results

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Background and aims: Internet Use Disorder (IUD) among adolescents is commonly associated with severe impairments in psychosocial wellbeing, interpersonal problems, academic failure, future unemployment and substance abuse. Thus, the reduction of prevalence rates of IUD is at high priority in both public health and educational policies. School-based preventive interventions facilitate a low-threshold approach for individuals with IUD. Moreover, indicated approaches which target adolescents at high-risk show larger effects than universal prevention programs. Cognitive-Behavioral interventions that are theory-based and focus on potentially modifiable and empirically supported risk factors have proven effective in the treatment of IUD and other mental disorders. The PROTECT intervention for indicated prevention of IUD in school settings was developed based on these preventive strategies. *Methods:* 340 adolescents, aged 12–18 years,

from 31 secondary schools in Germany, screened for high-risk of IUD, are randomly assigned to (a) PROTECT intervention group or (b) assessment only control group. The tested intervention consists of a cognitive-behavioral 4-session brief-protocol. Follow-up assessments are at 1, 4 and 12 months after admission. Primary outcome is the 12-months incidence rate of IUD. Secondary outcomes are the reduction of IUD and comorbid symptoms and the promotion of problem solving, cognitive restructuring and emotion regulation skills. *Results:* Preliminary results on the short-term effects of the PROTECT intervention at 1-month follow-up show a significant reduction of time spent online and an increase of IUD symptoms. *Conclusions:* The preliminary analyses show mixed findings regarding the effectiveness of the PROTECT intervention. The results will be discussed in the light of a potential increase in problem awareness.

OP-104

Out-of-control use of the internet for sexual purposes as behavioural addiction?

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Background and aims: There is an ongoing debate whether excessive sexual behaviour should be understood as a form of behavioural addiction (Karila, Wéry, Weinstein et al., 2014). The present qualitative study aimed at analysing the extent to which out-of-control use of the internet for sexual purposes (OUI SP) may be framed by the concept of behavioural addiction among those individuals who were in treatment due to their OUI SP. *Methods:* We conducted in-depth interviews with 21 participants aged 22–54 years (Mage = 34.24 years). Using a thematic analysis, the clinical symptoms of OUI SP were analysed with the criteria of behavioural addiction, with the special fo-

cus on tolerance and withdrawal symptoms (Griffiths, 2001). *Results:* The dominant problematic behaviour was out-of-control online pornography use (OOPU). Building up tolerance to OOPU manifested itself as an increasing amount of time spent on pornographic websites as well as searching for new and more sexually explicit stimuli within the non-deviant spectrum. Withdrawal symptoms manifested themselves on a psychosomatic level and took the form of searching for alternative sexual objects. Fifteen participants fulfilled all of the addiction criteria. *Conclusions:* The study indicates a usefulness for the behavioural addiction framework.

OP-105

Prevalence and correlations to video game addiction in youth

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Background and aims: There is currently no consensus on the defining criteria for video game addiction, its prevalence, and predictors. Much of the literature on gaming addiction grew out of discourses on substance addictions or other behavioural addictions (i.e. gambling). However, a distinct standpoint for gaming addiction in academic literature is needed. This study aims to examine video game ad-

diction specifically, by using the social ecological model as a guiding theoretical framework. The social ecological framework acknowledges that humans live within a changing environment and larger social contexts (Bronfenbrenner, 1977). It examines the relationships among factors at individual, interpersonal, organizational, community, and public policy levels. These five levels guide the research aims

of this study and enable findings to be free of preconceptions from previously well-studied addictions. The research question is: What is the prevalence of and correlates to video game addiction in youth? *Methods:* A secondary analysis of survey data will be conducted using the Ontario Student Drug Use and Health Survey (OSDUHS), 2015 cycle ($N = 10,426$). Students in grades 7 to 12 (ages 12 to 19) were surveyed in the province of Ontario, Canada. Measures embedded within the OSDUHS include the Problem

Videogame Playing Scale (PVP) which was used to measure gaming addiction with a cut-off score of five or more (Tejeiro Salguero & Moran, 2002; Turner et al., 2012). Measures and variables embedded within the OSDUHS covering individual, interpersonal, organizational, and community factors will be examined. *Results:* The results will determine the prevalence of and correlates to gaming addiction. *Conclusions:* This study helps identify at risk groups and key correlates for future in-depth study.

OP-106

The contribution of personality factors and gender to ratings of sex addiction among men and women who use the internet for sex purposes

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Background and aims: Sex addiction otherwise known as hypersexual disorder is characterized by excessive sexual activity which includes watching pornography, using chat rooms and cybersex on the internet. In this study we have investigated the contribution of the big five personality factors and sex to sex addiction. *Methods:* 267 participants (186 males and 81 females) were recruited from internet sites that are used for finding sexual partners. Participants filled in the Sexual Addiction Screening Test (SAST) the Big Five Index and a demographic questionnaire. *Results:* Men have shown higher scores on the SAST than women [$t(1,265) = 4.1$; $p < 0.001$]. Regression analysis showed that conscientiousness contributed negatively ($F_{(5,261)} = 8.12$; $R = 0.36$, $p < 0.01$, $\beta = -0.24$) and openness contributed positively ($F_{(5,261)} = 8.12$, $R = 0.36$, $p < 0.01$, $\beta = 0.1$)

to the variance of sex addiction scores. Neuroticism only marginally contributed to sex addiction scores ($F_{(5,261)} = 8.12$, $R = 0.36$, $p = 0.085$, $\beta = 0.12$). Finally, there was an interaction between sex and openness ($R^2_{\text{change}} = 0.013$, $F^2_{(1,263)} = 3.782$, $p = 0.05$) which indicated that openness contributed to sex addiction among women ($\beta = 0.283$, $p = 0.01$). *Discussion and conclusions:* this study showed that personality factors such as (lack of) conscientiousness and openness contributed to sex addiction. The study also confirmed previous evidence for higher scores of sex addiction among males compared with females. Among women, openness was associated with greater propensity for sex addiction. These personality factors predict who has the propensity to develop sex addiction.

OP-107

Distractibility by sexual stimuli – a biological marker of hypersexuality?

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Background and aims: A high distractibility by sexual stimuli could be a possible vulnerability factor for the development of sexual addiction. The first hypothesis of the present study was that subjects with high trait sexual motivation are more attracted by sexual cues than subjects with low trait sexual motivation. The second hypothesis was that this distractibility by sexual stimuli can result in addictive sexual behaviour, e.g. problematic use of pornography. Assuming this to be true then the distractibility should be greater in sexual addicts than in healthy control subjects. *Methods:* We conducted two experiments with the same experimental functional magnetic resonance imaging (fMRI) paradigm. In the first experiment we examined 100 healthy subjects (50 females). In the second experiment we compared the responses of 20 male sexual addicts to those of 20 control

subjects. The experimental task required the decision whether two lines, which were located left and right from a picture with either neutral or sexual content, were equally aligned or not. *Results:* First results show that the reaction times in the line alignment task were indeed greater in case of a sexual distractor than in case of a neutral distractor. However, the trait sexual motivation and the presence of sexual addiction had only small if any effects on reaction times and the neural activation pattern. *Conclusions:* Against our hypothesis, the distractibility by sexual stimuli is obviously not a prominent vulnerability factor for the development of a sexual addiction. Maybe this result can be traced back to a ceiling effect: Sexual cues strongly attract attention independent of trait sexual motivation or sexual compulsive behaviour.

OP-108

**Internet Gaming Disorder Symptoms in Emergent Adulthood:
The Interplay Between Anxiety and Family Cohesion**

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Background and aims: The current study aimed to determine the risk potential of anxiety (individual level factor) and the buffering effect of balanced family cohesion (contextual protective factor) in predicting internet gaming disorder (IGD) behaviours. *Methods:* Emergent adult (18–29) gamers residing in Australia who play massively multiplayer online (MMO) and massively multiplayer online role-playing games (MMORPGs) were assessed over both longitudinal ($N = 61$, mean age 22.53, $SD = 3.04$, assessed over three time points) and cross-sectional ($N = 125$, mean age 23.34, $SD = 3.29$ assessed online and face to face) formats. IGD symptoms were measured using the IGD-SF9 (Pontes & Griffiths, 2015), anxiety was assessed using the BAI (Beck & Steer, 1990) and balanced family cohesion

was assessed using the balanced family cohesion subscale derived from FACES-IV (Olson, 2011). Linear regression, moderation and growth analysis were applied. *Results:* Findings indicated that anxiety was a significant predictor of IGD with higher scores in anxiety indicating high scores in IGD both cross-sectional and longitudinally. Second, higher balanced family cohesion significantly buffered the anxiety effect on IGD. *Conclusions:* Emergent adults presenting with anxious symptoms who interact with online video games (i.e. MMO's and MMORPG) may be at higher risk of development of IGD symptoms. However, this risk could be reduced by interventions targeting to support cohesion within their immediate family context.

OP-109

Symptoms of an Internet-communication disorder can be predicted by individual competences, expectancies, and psychopathological symptoms

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Background and aims: Previous studies indicated that psychopathological symptoms could positively influence symptoms of an Internet-use disorder, as well as its specific forms, like the excessive use of communication applications (Internet-communication disorder; ICD). Additionally, theoretical models and structural equation approaches showed that this effect is mediated by persons' specific cognitions and Internet literacy (Brand et al., 2014, 2016; Wegmann et al., 2015). To investigate further preventive mechanisms which mediate the effect between personal predispositions and ICD, this study focused on the effect of social competences in the context of the development or maintenance of an ICD. *Methods:* Overall 549 participants (283f, 266m) aged between 16 and 29 years ($M = 21.67$; $SD = 2.64$) answered several questionnaires addressing depressive symptoms, social anxiety, interpersonal competence, Internet literacy, Internet-use expectancies, as well as symptoms of ICD in an online study. *Results:* Based on the empirical model by Wegmann et al. (2015) we analyzed a structural equation model to address the mediation

effect of self-regulation skills and Internet-use expectancies on symptoms of ICD. In addition, we added social competences as a third mediator. Beyond the mediating effects between psychopathological symptoms, self-regulation, avoidance expectancies, and ICD, an indirect mediation path between social competences, self-regulation and ICD could be observed, whereas psychopathological symptoms had no direct effect on social competences. The whole model explains 61.7% of the symptoms of ICD. *Conclusions:* This study strengthens previous findings and theoretical models by replicating self-regulation and Internet-use expectancies as mediating variables in the development and maintenance of ICD. Furthermore, self-regulation skills completely mediate the effect of social competences on ICD symptoms. Based on these findings, recommendations for possible prevention programs can be derived to reduce excessive and uncontrolled use of Internet-communication applications. In particular, self-regulation competences are worth considering in prevention programs.

OP-110

Substance and behavioral addictions: Concepts, causes, and cures

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Background and Aims: Most theories or descriptions of addiction allude to achievement of an appetitive effect (appetitive need-satiation cycles), preoccupation with that effect, loss of control (or dysregulation), and negative consequences (some shared, some unique to different behaviors). With these characteristics of addiction in mind, my newly published text (January, 2017) pertains primarily to 11 focal substance or behavioral addictions: tobacco, alcohol, other drugs, food, gambling, electronic media, love, sex, shopping, exercise, and work. **Methods:** I discuss an appetitive effects model of addiction, prevalence of these addictions, relations among the addictions (types of concurrent and substitute patterns), methods of assessment, prevention, treatment, and future directions. (See Table 1.) My discussion includes a multi-disciplinary perspective that is informed by the fields of social and clinical psychology, psychiatry, philosophy of science, social work, sociology, preventive medicine, and neuroscience, among others. **Results:** I include a major conceptual emphasis on misapplied appetitive processes. These processes are impacted by multiple levels of influence (i.e., neurobiological, cognitive, micro-social, macro-social/physical environmental). Part 1 of the text begins by presenting the concept of addiction (and different intentional and extensional definitional “camps”), followed by its etiology and consequences. Part 2 of the text presents types of substance and behavioral addictions, their co-occurrence, and assessment. Finally, Part 3 of the text presents potential extrapersonal and intrapersonal-level prevention and cessation solutions, and future directions. **Conclusions:** The presentation and text introduces the appetitive effects conceptualization of the addictions (the associational memory-appetitive system relations [AMASR] model). If we understand that addiction has a wide reach (and may impact approximately 50% of the adult population in a 12-month period), we may start to understand it as a problem of lifestyle which interfaces with our neurobiological systems associated with obtaining appetitive effects. There may be two lifestyle forces at work in (modern) societies that facilitate development of addictions to several different types of behaviors. First, there may be a “pull” to engage in easily addicting behaviors that are present in modern society, that “simulate” the attainment of appetitive effects within a sedentary lifestyle. Second, simultaneously, there may be a “push” to seek out behaviors to satisfy one’s drives in a fast-paced, technological, stressed-out world. We can see the interface of neurobio-

logical dysfunction with these lifestyle characteristics. Consequently, we may also have some suggestion on what is not addictive and can provide a better fit of neurobiological function with lifestyle.

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[Sussman, S. (2017). *Substance and Behavioral Addictions: Concepts, Causes and Cures*. Cambridge, United Kingdom: Cambridge University Press.]

OP-111

Development and validation of a Smartphone Deprivation Scale (SDS) for use with schoolchildren

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Background and aims: The use of smartphones has become common among the children. Its applications are mentally stimulating, they capture attention and regulate cognitive focus and, therefore, the time spent with the pocket device. The continuous inflow of information, chats/messages, or challenging games may trigger strong dependence on the device that is characterized by deprivation feelings at times of no- or limited access. The aim of this study was to validate a Smartphone Deprivation Scale (SDS), to gauge the deprivation feelings and their severity in schoolchildren when they cannot access their device. **Methods:** A 9-item, 7-point, agree-disagree scale was developed on the basis of an exercise deprivation scale (Robbins & Joseph, 1985). The scale was completed by 258 schoolchildren (mean age = 12.4 ± SD = 1.71 years). The participants also completed the Brief Addiction to Smartphone Scale (BASS; Csibi, Demetrovics, & Szabo, 2016). **Results:** An Exploratory Factor Analysis yielded a single factor that accounted for

55.84% of the total variance. The internal consistency of the scale was excellent (Cronbach's $\alpha = 0.90$). Content validity of the SDS was checked by comparing the scores of those scoring above and below the median on the BASS that yielded statistically significant differences ($p < .001$). The SDS correlated statistically significantly with the BASS ($r = .62, p < .001$) as well as with the deprivation subscale of the BASS ($r = .63, p < .001$), which demonstrated the inventory's congruent validity. **Conclusions:** These findings show that the SDS is a valid and sensitive scale for assessing symptoms of deprivation related to prevented smartphone use in schoolchildren. **Reference:** Robbins, J. M., Joseph, P. (1985). Experiencing Exercise Withdrawal: Possible Consequences of Therapeutic and Mastery Running. *Journal of Sport Psychology*, 7, 23-39.; Csibi, S., Demetrovics, Zs., & Szabo, A (2016). Development and psychometric validation of the Brief Smartphone Addiction Scale (BSAS) with schoolchildren. *Psychiatria Hungarica*, 31(1), 71-76.

OP-112

Development and evaluation of an Online Ambulatory Service for Internet addicts (OASIS)

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Background and aims: Low-threshold offerings for counseling have been proven to be crucial and effective in reaching out for patients with addictions. This may also be the case for individuals suffering from online behavioral addictions. Yet, there is a lack of knowledge about Internet addiction and specific caregivers. Moreover, it may be co-morbidity with depressive and sociophobic retraction that hinder patients to seek for help. **Methods:** To reach out for patients where their addiction stems from, an online clinic has been developed funded by the German Federal Ministry of Health. After a self-assessment in line with the DSM-5 criteria for Online Gaming Disorder individuals at risk are invited to participate in the Online Ambulatory Service for Internet addicts (OASIS) providing two webcam based consultation hours, one for thorough clinical diagnostics including the Mini International Clinical Neuropsychiatric Interview (MINI) and one for motivational interviewing and referrals for thera-

peutic interventions. The aim is to build a bridge for at least 120 Internet addicts between the digital world and the analogous help system throughout Germany within one year. The diagnostic workup is complemented with a set of psychometric tests to be edited throughout the course of the program (within 6 weeks) and in the follow-up (after 3 months) for evaluation. **Results:** Within the first three months from September to November 2016, more than 4000 individuals edited the self-test, and more than 40 patients went through the online-program. First experiences indicate that OASIS is an easy to handle online tool for patients with Internet addictions. At the turn of the half-year first results may show if the project is able to facilitate the transfer of patients into real life therapeutic settings. **Conclusions:** If the online ambulatory service proves to be effective in the longer run, OASIS is meant to be disseminated into the general addiction help system by further governmental funding.

OP-113

Co-morbid personality disorders in patients with Internet addiction

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Background and aims: Concerning the co-morbidity of Internet-addiction, many studies have focused on axis I disorders. Within meta-analyses depression, anxiety disorders and attention deficit hyperactivity disorder have shown to occur characteristically in this context. However, little is known about personality disorders in patients with Internet addiction. *Methods:* 41 patients diagnosed with Internet addiction (2 females) and 39 controls were tested for co-morbidity, personality features and disorders both psychometrically and with structured clinical interview (SKID-II). *Results:* More than half of the patients (56,4%) fulfilled the criteria for at least one personality disorder, more than a quarter (28,0%) for more than one. The highest occurrence was found for the avoidant (31,0%) and the depressed type (25,5%). Tested with the inventory for clinical personality accentuation (IKP) avoidant (13,2%) dependent (7,9%) and

schizoid (7,9) features were found most often and scored significantly higher ($p \leq 0.001$) as compared to controls. Moreover, patients with Internet addiction scored significantly higher in Becks Depression Inventory (BDI) and both in state and trait anxiety as measured by the STAI. *Discussion:* The results indicate that depression and anxiety do not only represent psychopathological features in Internet addicted patients on axis I but also on axis II. Depressive and avoidant personality disorders seem to represent characteristic co-morbidities and pre-existing conditions. Longitudinal studies are needed to differentiate in how far depression and anxiety are a to be viewed as pre-existing conditions of Internet addiction (on axis 1) but also in how far they may be a result of this novel behavioral addiction (on axis 2).

OP-114

**Delivering school-based prevention regarding digital use for adolescents:
A systematic review in the UK**

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Background: To date, the evidence base for school-delivered prevention programs for positive digital citizenship for adolescents is limited to internet safety programs. Despite the inclusion of Internet Gaming Disorder (IGD) as a provisional disorder in the DSM-5, with arguable worrying prevalence rates for problematic gaming across countries, and a growing societal concern over adolescents' digital use, no scientifically designed digital citizenship programs have been delivered yet, addressing positive internet use among adolescents. *Methods:* A systematic database search of quantitative and qualitative research evidence followed by a search for governmental initiatives and policies, as well as, non-profit organizations' websites and reports was conducted to evaluate if any systematic needs assessment and/or evidence-based, school delivered prevention or intervention programs have been conducted in the UK, targeting positive internet use in adolescent populations. *Results:* Limited evidence was found for school-based digital citizenship awareness programs and those that were identified mainly focused on the areas of internet safety and cyber bullying. To the authors' knowledge, no systematic

needs assessment has been conducted to assess the needs of relevant stakeholders (e.g., students, parents, schools), and no prevention program has taken place within UK school context to address mindful and positive digital consumption, with the exception of few nascent efforts by non-profit organizations that require systematic evaluation. *Conclusions:* There is a lack of systematic research in the design and delivery of school-delivered, evidence-based prevention and intervention programs in the UK that endorse more mindful, reflective attitudes that will aid adolescents in adopting healthier internet use habits across their lifetime. Research suggests that adolescence is the highest risk group for the development of internet addictions, with the highest internet usage rates of all age groups. Additionally, the inclusion of IGD in the DSM-5 as provisional disorder, the debatable alarming prevalence rates for problematic gaming and the growing societal focus on adolescents' internet misuse, renders the review of relevant grey and published research timely, contributing to the development of digital citizenship programs that might effectively promote healthy internet use amongst adolescents.

OP-115

The influence of shopping related pictures on risky decision-making in individuals with a tendency to buying disorder

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Background and aims: In disordered buying (also termed compulsive or pathological buying) individuals frequently chose the short-term rewarding option of buying despite negative long-term consequences, such as loss of family and friends, indebtedness, etc. In line with addiction models, recent studies focus on craving reactions and decision-making deficits as potential correlates of buying disorder. However, studies using laboratory tasks for decision-making show heterogeneous results. The aim of the current study is to investigate the effect of addiction-related cues (shopping pictures) on decision-making performance with respect to symptoms of buying disorder. **Methods:** We investigated participants from a predefined sample with the Game of Dice Task (GDT), a frequently used paradigm to investigate risky decision-making. Simultaneously to the GDT, participants had to respond on a 3-back working-memory task that contains shopping cues. Tendency to-

wards buying disorder as well as craving reactions towards shopping pictures were assessed by questionnaires. **Results:** In a moderated regression analysis, the significant interaction between 3-back task performance and tendency towards buying disorder indicates that participants with good 3-back-task performance and a low tendency to buying disorder perform well on the GDT, while individuals with good 3-back task performance and high tendency to buying disorder make more risky choices. It has been shown that craving reactions towards shopping pictures were correlated positively with the tendency to buying disorder, which was more prominent in individuals with a high tendency. **Discussion and Conclusions:** The results demonstrate the influence of shopping-related pictures on risky decision-making in the context of buying disorder and emphasize the role of craving with respect to impaired behavioral control mechanisms.

OP-116

Clinical characteristics associated with digital hookups, psychopathology, and clinical hypersexuality among US military veterans

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Background and aims: Digital social media platforms (e.g., Match, Manhunt, Grindr, Tinder) provide outlets through which individuals can find partners for consensual sexual encounters. **Methods:** Using a sample of US post-deployment military returning war veterans, we evaluated the prevalence of digital sex seeking with clinical correlates of psychopathology, suicidal ideation, and sexually transmitted infections (STIs). Specifically, using data from a baseline telephone interview and follow-up internet-based survey, we assessed the prevalence of sexual partnering via digital social-media platforms in a national sample of 283 US combat veterans. **Results:** Among veterans, 35.5% of men and 8.5% of women reported having used digital social media to meet someone for sex in their lifetime. Veterans who reported having used digital social media to find

sexual partners (DSMSP+) as compared to those who did not (DSMSP-) were more likely to be young, male, and in the Marine Corps. After adjusting for sociodemographic variables, DSMSP+ status was significantly associated with post-traumatic stress disorder (OR = 2.26, $p = 0.01$), insomnia (OR = 1.99, $p = 0.02$), depression (OR = 1.95, $p = 0.03$), clinical hypersexuality (OR = 6.16, $p < 0.001$), suicidal ideation (OR = 3.24, $p = 0.04$), and treatment for an STI (OR = 1.98, $p = 0.04$). **Conclusions:** Among a national sample of US post-deployment military veterans, DSMSP+ behaviors were prevalent, particularly among male veterans. Findings also suggest that in particular veterans who engage in DSMSP+ behaviors should be thoroughly screened during routine mental health appointments and counseled on the benefits of safe sexual practices.

OP-117

Are smartphone dependence symptoms related to FoMO, craving and withdrawal symptoms during smartphone abstinence? Findings from a natural experiment

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Background and aims: Adding to the ongoing discussion about the concept of behavioral addictions (Rosenburg & Feder, 2014), the present study tested whether or not individuals high on symptoms of smartphone addiction experience more craving and more withdrawal symptoms during a period of smartphone abstinence than those low on these symptoms. In addition, the role of Fear of Missing Out (FoMO) during abstinence was studied. *Methods:* A natural experiment was conducted among 799 visitors (32% male) of a music festival who filled out a pre-test questionnaire on symptoms of smartphone addiction, and who volunteered to go offline for at least 3 hours during the festival. If visitors agreed to go offline, they had to put their smartphone on the flight mode and the screen of their smartphone was made invisible by a seal. After at least 3 hours of smartphone abstinence,

participants had to visit a specific counter to have the seal professionally removed and to fill out the post-test questionnaire ($n = 470$, 59% response). In addition, a subgroup of offline festival visitors was interviewed about FoMO during abstinence ($n = 153$). *Results:* As expected, visitors who pre-test reported more symptoms of smartphone addiction also reported more withdrawal symptoms and more craving at the end of three hours of smartphone abstinence (post-test). Also, those with more symptoms reported more FoMO during abstinence. *Conclusions:* The findings of this natural experiment support the idea that individuals high on psychological symptoms of smartphone addiction also experience more physical symptoms of addiction during abstinence, and that FoMO may be one of the driving mechanisms behind smartphone addiction symptoms.

OP-118

Investigating food choice processes using hand movements in bulimia nervosa and binge eating disorder

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Background and aims: Navigating today's food environment with a high degree of immediate food availability requires frequent food choices. Eating-related psychopathologies such as binge eating behaviors are likely to moderate such food choices. Little is known, however, about food-related decision making processes in patients with binge eating behaviours. Furthermore, previous studies on food choice have typically focused on the behavioral outcomes of food decisions, while largely neglecting what occurs during the decision-making process. Hence, the present study aimed at investigating the time-course of the food choice process in patients with bulimia nervosa (BN) or binge-eating disorder (BED). *Methods:* 29 eating disordered patients (ED) meeting current DSM-5 criteria for BN ($n = 11$) or BED ($n = 18$) and 29 healthy controls (HC) participated in the study. A mouse-tracking paradigm was used to record

continuous hand-movements during repeated forced choices between healthy and unhealthy foods. The degree of curvature in response trajectories during mouse-based choice was calculated as a metric of the competition between choice options. *Results:* When making a healthy food choice, ED participants were stronger attracted towards the unhealthy food option and they took more time to make a food choice than HCs. In addition, the curvature of their mouse trajectory was strongly positively related to the mean number of objective binge eating episodes per week, suggesting a systematic relationship between the severity of the eating disorder and the extent of response conflict. *Conclusions:* It is concluded that, in an environment with high food availability, not only behavioral food choices, but also choice processes, are altered in patients with recurrent binge eating behaviors and should be targeted in interventions.

OP-119

**Examining the role of (un)conscious determinants in online gambling:
Complementing the theory of planned behavior with the concept of habit**

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Background and Aims: While concerns about online gambling behavior exist, the involved psychological mechanisms and playing patterns across digital media and locations remain unclear. *Methods:* This study provides information from a nationally representative sample of 1841 adult Belgian respondents. Theoretically, the study contributes by introducing the concept of habit strength as a predictor of gambling behavior. Habit strength is viewed as complementary to gambling predictors that are derived from the Theory of Planned Behavior. *Results:* Structural equation modeling indicates that both habit strength and perceived friend/family gambling behavior (norms) were associated with online gambling intent, which in turn contributed to an

increase in problem gambling. Moreover, habit strength predicted problem gambling both directly and indirectly via intent to play online or spend >20 Euro. Results further show that online gambling is quite prevalent, but that gambling applications differ in their digital and physical location pattern. For example, sports betting is often done via mobile devices. *Conclusions:* This study shows that complementary concepts from communications research (habit) and public health (theory of planned behavior) can be used to successfully predict gambling behavior. The relationship between online gambling and problem gambling indicates a need for policy makers and researchers to consider harm reduction in this new online environment.

OP-120

**Exploring Playing Motives, Persistence,
and Disengagement in Young Children's Active Video Game Play**

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Background and Aims: Video game playing motivation has been explored using various theoretical frameworks. Studies have included player motivations, psychological needs, gratifications, and expected outcomes. Less work has been done on the subject of gaming persistence and disengagement, while sustainable player engagement is relevant for both industry and public health. *Methods:* Recent literature on player motivations, persistence, and disengagement is reviewed. Separately, a grounded framework is developed via a two-step process that involves 20 open child/parent interviews and 10 interviews that follow a two-week within-family trial of a motion-based console system. The literature is contrasted with this information to identify areas where theoretical development is needed. *Results:* Existing theoretical work fits well with starting motivations. A natural split emerged within-game session

engagement and engagement with the game as a whole. Elements associated with persistence and (dis)engagement over time are harder to conceptualize within current theory. For instance, in-game investment drives future game choice, as players take ownership of digital assets. Within game-sessions, this translates to 'unfinished' business such as half-finished missions. With regards to cessation, the completion of objectives in a session demonstrates the dynamic nature of game play: completing objectives creates a natural break in the continuing flow of game play, and thus provides a clear opportunity to quit the game. *Conclusions:* Current approaches to explaining game engagement are a good starting point, but would benefit from a more explicit focus on the dynamic nature of video gaming over time to better understand game(session) persistence and cessation.

OP-121

Adverse childhood events in patients with buying disorder

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Background and aims: Childhood traumata represent an unspecific risk factor for several mental disorders. The study aimed at investigating if patients with buying disorder (BD) report more traumata during childhood than patients with other mental disorders. **Methods:** Patients with BD (n = 62), alcohol use disorder (n = 47), gambling disorder (n = 34) and treatment seeking psychiatric inpatients (PSY) (n = 119) answered the Pathological Buying Screener (PBS) to diagnose/exclude BD as well as the German versions of the Patient Health Questionnaire depression and general anxiety disorder modules (PHQ-9, GAD-7). Childhood traumata were assessed using the Adverse Childhood Experiences Questionnaire (ACE-D), which covers 10 specific childhood traumata. The groups did not differ in age (mean = 40.9 ± 12.2; range 18-69 years), but with regard to gender ($\chi^2 = 61.1$, $p < 0.001$) with most females in the BD (77.4%) and the PSY (75.6%) group. **Re-**

sults: Patients with BD reported more anxiety symptoms than patients with gambling disorder but did not differ from the other groups ($F(3, 249) = 5.31$, $p < 0.0019$). With respect to depression, patients with BD showed more symptoms than patients with alcohol use or gambling disorder but did not differ from the PSY group ($F(3, 245) = 7.55$, $p > 0.001$). Regarding the number of childhood traumata no between group differences were found (total sample $N = 255$, mean = 3.2 ± 2.4), though 57% of patients with BD experienced mental illness in their families, which was more often than in the other groups. No significant correlations emerged between the PBS and the ACE-D. **Discussion and Conclusions:** The results indicate that the prevalence of childhood traumata does not differ between patients with BD and other clinical groups. Hence, adverse childhood events seem to be an unspecific risk factor for BD.

OP-122

High-school students: Social adaptation and internet addiction

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Aim: Internet addiction is universally believed to disturb both external and internal adaptation to life requirements. The study is aimed to prove imbalance between addiction and adaptation. **Methods:** Two questionnaires were used: "Chen Internet Addiction Scale", or CIAS (Chen et al., 2003), adapted to the Russian audience by K. Feklisov and V. Malygin (2010), and diagnostic method "Social and Psychological Adaptation" (SPA) originally created by C. Rogers and R. Diamond (1954), later several times adapted and reformatted to the Russian audience; adaptation made by A. Osnitsky (2004) was used. The CIAS subscales include: Com (compulsivity), Wit (withdrawal), Tol (tolerance), IH (intrapersonal & health problems), TM (time management). The SPA subscales include: "General Adaptation Index" (GAI), "Self-acceptance" (SA), "Acceptance of others" (AoO), "Emotional Comfort" (EC), "Locus of control" (LC) and "Dominance/Subdominance" (Dom). **Sample:** 189 high-school students (14–17 y.o.), including 60 gifted students – participants of multilevel

competitions for talented science students. Self-selected students (N = 129) replied to questions via Google Forms; 60 preselected gifted students replied offline at a training session. **Results:** All the SPA subscales negatively ($p < 0,01$) correlate to all the CIAS subscales; only Dom is correlated insignificantly. The differences between the gifted and general subsamples: gifted are classified significantly higher ($p < 0,05$) by two SPA subscales: GAI and LC, and significantly lower by CIAS subscales such as IH and two compound scales: Com + Wit + Tol (addictive) and IH + TM (affiliative). **Conclusions:** Internet addiction is negatively correlated with social and psychological adaptation. Compared to other adolescents, gifted high-schoolers are better adapted (by SPA), mostly due to having internal locus of control. They report less problems with Internet addiction, namely on IH and on the affiliative compound scale, as well as on the addictive compound scale but not on any of the three psychological subscales which are grouped within the latter.

OP-123

Compulsive sexual behaviour: prefrontal and limbic volume and interactions

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Background and aims: Compulsive sexual behaviors (CSB) are relatively common and associated with significant personal and social dysfunction. The underlying neurobiology is still poorly understood. The present study examines brain volumes and resting state functional connectivity in CSB compared with matched healthy volunteers (HV). **Methods:** Structural MRI (MPRAGE) data were collected in 92 subjects (23 CSB males and 69 age-matched male HV) and analyzed using voxel-based morphometry. Resting state functional MRI data using multi-echo planar sequence and independent components analysis (ME-ICA) were collected in 68 subjects (23 CSB subjects and 45 age-matched HV). **Results:** CSB subjects

showed greater left amygdala gray matter volumes (small volume corrected, Bonferroni adjusted $P < 0.01$) and reduced resting state functional connectivity between the left amygdala seed and bilateral dorsolateral prefrontal cortex (whole brain, cluster corrected FWE $P < 0.05$) compared with HV. **Conclusions:** CSB is associated with elevated volumes in limbic regions relevant to motivational salience and emotion processing, and impaired functional connectivity between prefrontal control regulatory and limbic regions. Future studies should aim to assess longitudinal measures to investigate whether these findings are risk factors that predate the onset of the behaviors or are consequences of the behaviors.

OP-124

Symptoms of an Internet-communication disorder can be predicted by individual competences, expectancies, and psychopathological symptoms

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Background and aims: Previous studies indicated that psychopathological symptoms could positively influence symptoms of an Internet-use disorder, as well as its specific forms, like the excessive use of communication applications (Internet-communication disorder; ICD). Additionally, theoretical models and structural equation approaches showed that this effect is mediated by persons' specific cognitions and Internet literacy (Brand et al., 2014, 2016; Wegmann et al., 2015). To investigate further preventive mechanisms which mediate the effect between personal predispositions and ICD, this study focused on the effect of social competences in the context of the development or maintenance of an ICD. **Methods:** Overall 549 participants (283f, 266m) aged between 16 and 29 years ($M = 21.67$; $SD = 2.64$) answered several questionnaires addressing depressive symptoms, social anxiety, interpersonal competence, Internet literacy, Internet-use expectancies, as well as symptoms of ICD in an online study. **Results:** Based on the empirical model by Wegmann et al. (2015) we analyzed a structural equation model to address the mediation

effect of self-regulation skills and Internet-use expectancies on symptoms of ICD. In addition, we added social competences as a third mediator. Beyond the mediating effects between psychopathological symptoms, self-regulation, avoidance expectancies, and ICD, an indirect mediation path between social competences, self-regulation and ICD could be observed, whereas psychopathological symptoms had no direct effect on social competences. The whole model explains 61.7% of the symptoms of ICD. **Conclusions:** This study strengthens previous findings and theoretical models by replicating self-regulation and Internet-use expectancies as mediating variables in the development and maintenance of ICD. Furthermore, self-regulation skills completely mediate the effect of social competences on ICD symptoms. Based on these findings, recommendations for possible prevention programs can be derived to reduce excessive and uncontrolled use of Internet-communication applications. In particular, self-regulation competences are worth considering in prevention programs.

OP-125

**Clinical diversity among males seeking treatment for compulsive sexual behaviors.
Qualitative study followed by 10-week diary assessment**

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Background and aims: We wanted to assess similarities and diversity among males seeking treatment for compulsive sexual behaviors and verify a correspondence of perceived reasons of pornography use with real-life data. **Methods:** We conducted semi-structured interviews with 9 males in age of 22–37 years ($M = 31.7$; $SD = 4.85$) followed by 10-week long diary assessment. During interviews we covered characteristic of CSB symptoms, underlying psychological mechanisms, and role of social relations. Using questionnaires' methods, we verified qualitative data and in addition we conducted 10-week long diary assessment to examine real-life patterns of CSB. **Results:** All subjects expressed high level of severity of pornography use and masturbation. They also presented increased level of anxiety and declared that pornography use and masturbation serves for mood and stress regulation. There was high diversity in

terms of impulsivity, social competence and other psychological mechanism underlying CSB. Data collected in diary assessment uncovered high diversity in patterns of sexual behaviors (such as frequency or binge pornography use, dyadic sexual activity) and triggers. It was impossible to fit one regression model for all subjects. Instead each subject had his own model of predictors of CSB mostly not related to decelerated triggers. **Discussion and conclusions:** Despite similar scheme of problematic sexual behavior and accompanied emotions and thoughts CSB seems to have homogeneous psychological mechanisms. Individual analysis of longitudinal diary assessment uncovered high variability in individual predictors of pornography use and masturbation. Therefore, those individual patterns have to be carefully studied in clinical settings to provide effective treatment.

OP-126

**Short-term Treatment of Internet and Computer Game Addiction (STICA) –
a randomized clinical trial**

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Background and aims: Clinical experience indicates that patients with internet addiction display psychopathological patterns (tolerance, withdrawal, interpersonal conflict, mood modification, and relapse) comparable to substance-use disorders. The characteristic psychological symptom for Internet addiction is the irresistible urge to 'be online', which may cause psychobiological harm for the user and may lead to an addictive behavior. Several representative epidemiological studies revealed prevalence-rates of internet addiction in the general population ranging from 0.5 to 1.0% with higher rates in high-risk populations. **Methods:** Taking into account that internet addiction is a growing health problem, a disorder-specific, manualized short-term treatment (three months of combined group and individual treatment) for Internet and Computer game addiction (STICA), based on cognitive behavior-therapy was devel-

oped. The efficacy of this psychotherapy and the stability of treatment outcomes were tested rigorously in a multi-center randomized controlled trial (see STICA, www.clinicaltrials.gov). **Results:** An analysis of the first results of this manualized short-term treatment was performed recently. Nearly 70 percent of the treatment-seeking patients in this trial completed STICA regularly – whereas 30 percent of the patients terminated treatment prematurely and were thus considered as drop-outs. **Conclusions:** The first outcomes including 6-month follow-up data of a cohort of over 165 patients will be presented and discussed. The results indicate a significant decrease of internet use and on-line-time as well as a decrease of concomitant psychopathological consequences. This bears important insights into the effectiveness of psychotherapeutic treatment in internet addiction.

OP-127

The role of emotional competence in the relationship between Internet addiction and psychological adjustment among Hong Kong adolescents: A cross-sectional study

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Background and aims: The alarming rates of addictive online behaviors, particularly among adolescents, have raised concerns across the world. While comorbidity of Internet addiction with other psychosocial problems has been frequently reported, the underlying mechanisms remain unclear. The present study aimed to investigate the role of emotional competence in the relationship between Internet addiction and psychological adjustment in a sample of junior secondary school students. *Methods:* A total of 404 Secondary 1 students (mean age 12.4, $SD = 0.8$) in Hong Kong participated in the cross-sectional survey. Young's 20-item Internet Addiction Test (IAT) was used to measure students' Internet addictive behaviors. A validated Emotional Intelligence Scale was used to measure emotional competence in terms of self-emotional appraisal, others' emotional appraisal, use of emotion, and regulation of emotion. Students' psychological adjustment was indexed by their scores on the 21-item Depression Anxiety Stress Scale (DASS) and the 20-item UCLA Loneliness Scale. Two hypothesized models that specifying the moderating effect vs. mediating effect of emotional competence in the relationship between Internet addiction and psychological adjustment were examined. *Re-*

sults: Based on Young's criteria for Internet addiction, 81.7% of the participants were identified as mild, 17.8% as moderate, and 0.5% as severe. Results of structural equation modelling supported the mediation model in which Internet addiction has both direct effects ($\beta = .43, p < .001$) and indirect effects through the mediation of emotional competence on adolescents' psychological adjustment. The standardized indirect effect was $(-.11)(-.42) = .04, p < .001$. On the other hand, the interactive effect between Internet addiction and emotional competence on students' psychological adjustment was non-significant ($\beta = .01, p = .73$). *Conclusions:* The comorbidity of Internet addiction and psychological problems is at least partially due to the impairment of emotional competence caused by one's uncontrollable use of the Internet. Longitudinal studies are needed to further understand the causal pathway between Internet addiction and psychopathology. *Acknowledgements:* This presentation and the research project "Internet Addiction in Hong Kong Secondary School Students: The Role of Social-Emotional Competence" are financially supported by the Central Research Grant of The Hong Kong Polytechnic University (Ref. No.: PolyU 254021/14H).

SHORT PRESENTATIONS

SH-01

Problematic social networking sites use among adolescents: A national representative study

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Despite being one of the most popular activities among adolescents nowadays, robust measures of Social Media use and representative prevalence estimates are lacking in the field. N = 5961 adolescents (49.2% male; mean age 16.6 years) completed our survey. Results showed that the one-factor Bergen Social Media Addiction Scale (BSMAS) has appropriate psychometric properties. Based on latent profile analysis, 4.5% of the adolescents belonged to the at-risk

group, who reported low self-esteem, high level of depression and the elevated social media use (34+ hours a week). Conclusively, BSMAS is an adequate measure to identify those adolescents who are at risk of problematic Social Media use and should therefore be targeted by school-based prevention and intervention programs. [This study was supported by the Hungarian National Research, Development and Innovation Office (Grant number: K111938)].

SH-02

The six-component problematic pornography consumption scale

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Background and aims: To our best knowledge, no scale exists with strong psychometric properties assessing problematic pornography consumption which is based on an overarching theoretical background. The goal of the present study was to develop a short scale (Problematic Pornography Consumption Scale; PPCS) on the basis of Griffiths' (2005) six-component addiction model that can assess problematic pornography consumption. *Methods:* The sample comprised 772 respondents (390 females; *Age* = 22.56, *SD* = 4.98 years). Items creation was based on the definitions of the components of Griffiths' model. *Results:*

A confirmatory factor analysis was carried out leading to an 18-item second-order factor structure. The reliability of the PPCS was good and measurement invariance was established. Considering the sensitivity and specificity values, we identified an optimal cut-off to distinguish between problematic and non-problematic pornography users. In the present sample, 3.6% of the pornography consumers belonged to the at-risk group. *Discussion and Conclusion:* The PPCS is a multidimensional scale of problematic pornography consumption with strong theoretical background that also has strong psychometric properties.

SH-03

Sex mindset beliefs can diminish the negative association between relationship satisfaction and problematic pornography consumption

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Background and aims: The present research investigated the associations between relationship satisfaction and problematic pornography consumption considering beliefs

about the changeability of sexual life. *Methods:* In Study 1 (N1 = 769), the Sex Mindset Scale was created which measures beliefs about the malleability of sexual life. In

Study 2 and Study 3 (N2 = 315, N3 = 378), structural equation modeling (SEM) was used to identify the relationship patterns between problematic pornography consumption, relationship satisfaction and sex mindset beliefs. *Results:* Confirmatory factor analyses (Study 1) demonstrated strong psychometric properties. Each examined model (Study 2 and Study 3) showed that sex mindset beliefs are positively and directly related to relationship satisfaction, while negatively and directly related to problematic pornography

consumption. Additionally, Problematic pornography consumption and relationship satisfaction were not related. Thus, problematic pornography use did not mediate the relationship between sex mindset beliefs and relationship satisfaction. *Discussion and Conclusions:* In the light of our results, the negative relationship between problematic pornography consumption and relationship satisfaction disappears by considering sex mindset as a common denominator.

SH-04

Online gamblers opinion about harm-minimisation tools

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Background and aims: Online gambling is legal in France since 2010. Licenses are given to gambling operators that demonstrate their ability to respect the legal framework (security, taxation, consumer protection, etc.). Among the preventive measures to protect vulnerable gamblers, there is an obligation to provide moderators of online gambling. These moderators should allow gamblers to limit their bets, exclude themselves from the website during 7 days, and consult at any time instant balance of the gambler account. *Methods:* This research is an experimental randomized controlled trial, risk prevention targeted. Research design is divided into four sub-studies depending on the studied moderator: limiting bonuses, self-exclusion, self-limitation and information. The study sample consists of 485 volunteers. For each experimental condition and control groups, one third of the sample size is comprised of gamblers from each of the three major forms of games (lottery and scratch tickets, sports and horserace betting and poker). For each form of gambling, the

sample is splitted into two in order to include as many problem gamblers as non-problem gamblers. Experimental session is a gambling situation on a computer in our research center. The gambler is invited to play on his favorite gambling site as usual, with his own gambler account and his own money. Data collected comprise sociodemographic characteristics, gambling habits, interview about enjoyment and feeling out of control during the gambling session, moderator impact on gambling practice, statement of gambling parameters and questionnaires (BMIS, GRCS, CPGI, GACS). Moderator efficiency is assessed based on the two major characteristics of gambling behavior: money wagered and time spent in gambling. *Results:* The preliminary results show that online gamblers are interested in these protection tools but they use them little. Differences exist depending on the type of game and whether the gamblers are at risk or not. *Conclusions:* Changes are needed to increase the use and understanding of harm-minimisation tools.

SH-05

Is it just a phase? Transitions in problematic gaming among adolescents

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Background: Video games are an integral part of the daily lives of youth, yet playing games excessively has been associated with emotional and behavioral problems. Previous research on problematic gaming has produced conflicting findings about levels and persistence of problematic gaming over time due to differences in assessment and limited longitudinal research. We use a systematic review to identify how patterns of normal and problematic gaming change over time in adolescents. *Methods:* This study is part of a larger systematic review of associations between problematic gaming and mental and behavioral health in adolescents. We searched PubMed and PsycInfo to access English-language, peer-reviewed empirical research that (1) assessed problematic gaming with a gaming-specific scale in representative samples of adolescents and (2) assessed associations between

problematic gaming and mental health. *Results:* Of the 34 studies that met inclusion criteria for the broader study, three longitudinal studies examined transitions from problematic to normal gaming over time and one study included transitions between at-risk gaming and other states. Incidence rates of problematic gaming are 0.85-1.3% over one to two years; up to 50% of identified cases resolved after one to two years. In the single study assessing longitudinal changes associated with at-risk gaming, those classified as at-risk gamers were more likely to have resolution of symptoms than be classified as problematic gamers after one year. *Conclusion:* In the few studies examining longitudinal transitions between states of problematic and normal gaming, up to half of adolescents classified as having problematic gaming show resolving symptoms over time.

SH-06

Compulsive buying and vulnerability to marketing

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Background and aims: We are currently evolving in a consumer society, led among others by an increasingly aggressive marketing to influence consumer behavior. Several studies were carried out on the impact of marketing on tobacco and alcohol consumption. One can well imagine that marketing strategies can also influence buying behaviors, especially compulsive buying. The objective of the study was to assess the influence of marketing on purchase intention, especially by comparing healthy and compulsive buyers. **Methods:** Data collection was conducted in the first quarter of 2016 based on an anonymous Internet survey. Participants (n = 242) were recruited through social networks and blogs specialized in fashion or “fashion addicts”. All adult women were eligible for the study. The survey included the *Compulsive Buying Scale* (Faber & O’Guinn, 1992) to identify compulsive buyers, and several other self-assessment tools to assess buying motivations (*Buying Motives Questionnaire*, adaptation from the *Gambling Motives Questionnaire* – Stewart & Zack, 2008), impulsivity (*UPPS-P Impulsive Behavior Scale* – Lynam & al, 2006) and self-esteem (*Rosenberg Self-Esteem Scale* – Rosen-

berg, 1965). To assess vulnerability to marketing, we presented 6 series of 3 pictures representing purchasing situations. The situations corresponded to 3 modalities of fashion marketing: sale price (with or without different levels of price reduction), design of labels (with or without colors and pictures) and fashion brand (with and without the mention of deemed cheap or expensive brands). The 3 modalities were presented twice, each in 2 different series of pictures. **Results:** The sample was composed of 208 healthy (86.0%) and 34 compulsive buyers (14.0%). When compared to healthy controls, compulsive buyers reported a higher vulnerability to marketing, impulsive traits especially for urgency and lack of premeditation, a lower self-esteem and specific buying motives. **Conclusions:** The perspectives of this study are to improve therapeutic and preventive measures for the management of compulsive buyers (therapeutic education, relapse prevention, etc.). The aim of such measures would be to explain the goals of the marketing strategies in terms of encouraging consumption and to set up behavioral and cognitive alternatives to cope with compulsive buying.

SH-07

Psychological processes implied in the development, maintenance and relapse of Internet Gaming Disorder: Protocol for a study to be conducted in treatment-seeking cases

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Background and aims: Internet gaming disorder has recently been included as a potential new condition in the DSM-5 within its section dedicated to the disorders that need further research before definitive inclusion. So far, only a few studies have been conducted among treatment-seeking problematic video games users. We have the hypothesis that, in this population, gaming could serve as a coping mechanism against self-stressors or negative ruminations or that it could alternatively be the expression of impulsivity. Our aims are (1) to develop a standardized assessment protocol targeting these psychological factors and (2) to analyze their predictive value in terms of treatment outcomes (e.g., completion of treatment, change in symptoms, relapse). The following psychological processes will be considered: (1) self-discrepancies (i.e. the potential gap between the idealized and actual representation of oneself; Higgins, 1987), (2) ruminations (i.e. abstract vs concrete thinking style; Watkins, 2008), and (3) impulsivity (as com-

posed of four dimensions: urgency, lack of premeditation, lack of perseverance and sensation seeking; Whiteside and Lynam, 2001). **Methods:** Treatment-seeking individuals with Internet Gaming Disorder will complete computerized versions of the following questionnaires: (1) the Self-Discrepancies Scale, (2) the Mini Cambridge Exeter Repetitive Thoughts Scale, and (3) the UPPS-P, along with scales assessing symptoms of excessive online gaming and comorbid psychopathology. Measures will be taken at the beginning of the psychological intervention, at the end of it, and at 6 month follow-up. **Expected results:** The study will allow to determine which factors predict treatment outcome (e.g., success, degree of symptoms reduction, drop-out, and relapse). We also expect a decline of the identified dysfunctional processes during the course of therapy. **Conclusions:** This assessment protocol may offer a better understanding of the development and course of Internet Gaming Disorder, and favor the use of individualized treatments.

SH-08

Excessive exercising in patients with amyotrophic lateral sclerosis (als)

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Introduction: There is evidence that vigorous physical activity might be a risk factor for developing ALS. This assumption is based on the observation that professional athletes (e.g. professional football and soccer players) have an increased risk for developing ALS. Thus, the main aim of our study was to compare the presence of exercise dependence between patients with ALS and the general population. **Methods:** A hospital-based specialized ALS clinic population (n = 60) was compared with a representative population-based sample (n = 2520). All participants completed the Exercise Dependence Scale (EDS-21) assessing excessive exercising and the 4-item Patient Health Questionnaire (PHQ-4) a screening instrument for depression and anxiety symptoms. Groups were compared using non-parametric tests (Mann-Whitney U-Test) and binary logistic regression analysis. **Results:** 3.3% of the patients with ALS and 2.6% of the general population met the threshold

for exercise dependence on the EDS-21 ($\chi^2 = 0,108$, $p = 0,742$). The total EDS-21 score was significantly different between groups with ALS patients reporting higher values (MdALS = 25, MdPOP = 21, $U = 64335$, $p = 0,044$). ALS patients scored on average higher on the subscale 'time', but not on the subscales 'withdrawal effects', 'continuation', 'tolerance', 'lack of control', 'reduction of other activities', or 'intention effects'. This result remained significant after adjusting for age, sex, educational level, and depression/anxiety symptoms. **Discussion:** The lack of group differences in 6 out of seven EDS-21 subscales does not support the hypotheses that lifetime exercise dependence is more frequent in patients with ALS compared to the general population. However, patients with ALS reported significantly more time spent with exercising compared to the population sample suggesting high levels of physical activity in this patient group.

SH-09

Gambling transitions among adult gamblers:

A multi-state model using a markovian approach applied to the JEU cohort

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Background and aims: The aim of the study was to study transitions between two states of gambling in adulthood (problem gambling and non-problem gambling) and to identify factors that might influence these transitions. **Methods:** Data for this 2-year long longitudinal study were collected in a French Outpatient Addiction Treatment Center, in gambling establishments and through the press. Both problem gamblers and non-problem gamblers were evaluated using a structured interview and self-report questionnaires. The statistical analysis was carried out using a Markovian approach. **Results:** The analyzed cohort consisted of 304 gamblers with 519 observed transitions. Participants with no past-year gambling problems (based on the DSM-IV) had a probability of about 90% of also having no past-year gam-

bling problems at the following assessment, whereas the observed percentage of problem gamblers transitioning to non-problem gambling was of 48%. We reported (i) vulnerability factors of transitioning to problem gambling (such as an anxiety disorder or an Attention Deficit Hyperactivity Disorder (ADHD) during the childhood), (ii) protective factors for non-problem gamblers, (iii) recovery factors (such as ongoing treatment and younger age) and (iv) persistence factors of a gambling problem (such as a persistent ADHD). **Conclusions:** The status of problem gambler is unstable over time, whereas we found stability among non-problem gamblers. Our findings suggest the existence of vulnerability and protective factors in gambling. These results lead to think about preventive actions and adaptive care.

SH-10

The relation between internet/game, smartphone addiction and psychosocial factor of children and adolescents in the Republic of Korea

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Background and aims: A number of previous studies have reported that internet/game, smartphone addiction is significantly related to psychosocial factors and psychiatric disorders such as depression, anxiety, self-esteem, Attention Deficit/Hyperactivity Disorder (ADHD), and so on among children and adolescents. The aim of this study is to examine the psychosocial features and compare those variables by school grade in child and adolescent. **Methods:** 100 students with internet/game, smartphone addiction were recruited. Addicted state was defined as representing internet/game, smartphone problem or pathologic use patterns in any of self-report or parent report addiction evaluation scale such as Korean self-diagnostic program for internet addiction Scale(K), Smartphone addiction proneness scale(S), Smartphone addiction scale-short version(SAS-SV), Internet Addiction Proneness Scale for Youth: Observer Rating Scale(KO). They were 33 children (26 males and 7 females) and 67 adolescent (51 males and 16 females) residing in Seoul city or Gyeonggi-do province, Korea. Subjects were divided into child and adolescent group according to their grade of elementary and middle-high school attendance. The mean of children's age is 9.76 ($SD = 1.521$) and adolescent's age is 14.25 ($SD = 1.307$). The measures were self-report questionnaire battery including Children's Depression Inventory (CDI), Beck Depression Inventory (BDI), State Anxiety Inventory for Children (SAIC), State-Trait Anger Expression Inventory-X1 (STAI-X1), Rosenberg Self-Esteem Scale (RSES), Barratt Impulsiveness Scale-11 (BIS-11), Aggression Questionnaire (AQ), ADHD Rating Scale (ARS), Quality of Life Scale (QOL), Happiness Scale (HAPPY). And psychologists and psychiatrists interviewed each participant to confirm internet/game, smartphone addiction and comorbid psychiatric disorders. For the validity of the internet/game, smartphone addiction diagnosis, we developed semistructured interview form, Diagnostic Interview for Internet, game, social network service, and etc. Addiction 2.0 (DIA2.0). DIA2.0 was developed by adding

'desire' to the existing domains from the internet game disorder (IGD)-9 criteria. It is a semi-structured instrument with scoring of 0-3 in likert scale. **Results:** All subjects showed significant correlations in depression, anxiety, self-esteem, impulsiveness, Aggression, ADHD, quality of life and Happiness. But the correlation between psychosocial features and internet/game, smartphone addiction of child and adolescent were respectively different. Specifically, there were significant positive correlation as in order of ADHD ($r = .497, p < .01$) and depression ($r = .374, p < .05$) in child group. On the other hand, there were significant positive correlation as in order of anxiety ($r = .490, p < .01$) and depression ($r = .427, p < .01$) in adolescent group. Also there were significant negative correlations as in order of happiness ($r = -.386, p < .01$) and self-esteem ($r = -.282, p < .05$) in adolescent group. That is, while children who have high level of ADHD are more likely to be addicted to internet/game and smartphone, adolescents are more likely to be addicted to internet/game and smartphone when they have high level of depression or anxiety and low level of happiness or quality of life. **Conclusions:** Whereas ADHD has an effect on internet/game, smartphone addiction in children, it could be assumed that subjective emotions (anxiety, depression, happiness, quality of life) have an effect on internet/game, smartphone addiction in adolescents. So clinicians should consider difference of children and adolescents as a therapeutic intervention when faced with internet/game, smartphone addiction. Comorbidity of internet/game, smartphone addiction is different according to the developmental age, it seems to be possible to present differentiated direction of clinical intervention. There is a strong need to elucidate the exact relation between internet/game, smartphone addiction and psychosocial factors, psychiatric disorders in a clinical longitudinal study. **Acknowledgement:** This study was supported by a grant of the Korean Healthcare Technology R&D Project, Ministry of Health and Welfare, Republic of Korea (HM14C2603).

SH-11

What's the relationship between impulsivity traits and anxiety-depressive symptomatology on men gamblers?

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Background and Aims: Impulsivity is a personality trait known to be closely linked to addictive behavior, including problem gambling (Gullo et al., 2014, MacLaren et al.,

2011). Moreover, depression and anxiety are two factors which have an influence on decision making in terms of loss (or decrease) of inhibitory control and of increased impul-

sive decisions during gambling sessions (Maccallum et al., 2007). However, to date, little research has explored the relationship that impulsivity may have with depression and anxiety. So, this study aimed to explore presence, intensity and nature of impulsivity, depression and anxiety. *Methods:* First, we asked administrators of different gambling forums to obtain their agreement to recruit participants. Then, after receiving their authorization, a total of 267 men adult gamblers (online and live) have accepted to complete online questionnaires on LimeSurvey, measuring depression and anxiety (HADS), and different impulsivity's components and its intensity (UPPS-P). Participants were divided into three groups: problem gamblers ($n = 65$), at risk gamblers ($n = 163$), and non-problem gamblers ($n = 39$) using the South Oaks Gambling Screen (SOGS) score. The data collection was carried out with an anonymous file and then placed in a data bank. The statistical analyze (ANOVA) was carried out with SPSS (version 21). *Results:* All gamblers recruited displayed a particular sociodemographic profile: they were graduates of higher education, mostly executives followed by students, single or married, mostly without children and working full-time. Anxiety and depression significantly associated with the severity of gambling problems (respectively $F = 13.35$ and $F = 16.89$, $p < .01$). However, only the anxious symptomatology emerged for the group of problem gamblers [Mean = 9.1 (SD = 4.2), $p < .05$]. Furthermore, under impulsivity dimensions such as negative

and positive urgency and sensation seeking decreased significantly depending on the severity of gambling problems (respectively $F = 20.89$, $F = 14.89$ and $F = 4.98$, $p < .01$), whereas the lack of premeditation and perseverance increased significantly ($F = 10.50$ and $F = 3.07$, $p < .05$). Anxiety scores were negatively correlated, and significantly, to the negative and positive urgency, and to sensation seeking (respectively $r = -.42$, $r = -.38$ and $r = -.22$, $p < .05$); although we observed significant positive correlations with the lack of premeditation and perseverance ($r = .24$ and $r = .28$, $p < .05$). Same types of correlations were found with depression scores, except for sensation seeking whose the link wasn't negative and significant. *Discussion:* The results show the specific profile of men gamblers. However, this is probably due to the composition of our sample: mostly poker players. The presence of anxious symptomatology, more than depressive, seems to be involved in problem gamblers. Any presence of positive and negative urgency and sensation seeking may be explained by our sample composed mainly of poker gamblers. Indeed, poker is a game of luck and strategy, where time spent gambling allows more or less knowledge and a gaming experience that would facilitate the development of inhibition's ability on emotions (negative and positive) and sensation seeking. *Conclusions:* These results open up new research perspectives regarding different dimensions of impulsivity, and may have a clinical implication for problem and pathological gamblers.

SH-12

Gambling disorder: Association between duration of illness, clinical and neurocognitive variables

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Background and aims: Gambling disorder (GD) may have its onset in a wide range of ages, from adolescents to old adults. Additionally, individuals with GD tend to seek treatment at different moments in their lives. As a result of these characteristics (variable age at onset and variable age at treatment seeking), we find subjects with diverse duration of illness (DOI) in clinical practice. DOI is an important but relatively understudied factor in GD. Our objective was to investigate clinical and neurocognitive characteristics associated with different DOI. *Methods:* This study evaluated 448 adults diagnosed with GD. All assessments were completed prior to treatments being commenced. *Results:* Our main findings were: (1) there is a negative correlation between DOI and lag between first gambling and onset of

GD; (2) lifetime history of AUD is associated with a longer duration of GD; (3) the presence of a first degree relative with history of AUD is associated with a more extended course of GD and (4) there is a negative correlation between DOI and quality of life. *Conclusions:* the current study suggests that some important variables are associated with different DOI. Increasing treatment-seeking behavior, providing customized psychological interventions and managing effectively AUD may lower the high levels of chronicity in GD. Furthermore, research on GD such as phenomenological studies and clinical trials may take into account the duration of GD in their methodology. DOI might be an important variable when analyzing treatment outcome and avoiding confounders.

SH-13

PC versus smartphone, what makes difference?

A latent class analysis of internet and smartphone addiction in adolescents

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Background and aims: As smartphone usage has become generalized and enables us to use internet regardless of time and place, the risk of internet and smartphone addiction has risen accordingly, especially in adolescents who are highly accessible to the latest technology. Although several studies have shown positive correlation between internet/smartphone addiction and various personality/clinical features, relatively few examined more comprehensive relationship among the content (e.g. game, SNS) and vehicle (PC or smartphone) of addiction and such features. Thus, this study aimed to classify adolescents into subgroups based on the level of each domain or subfactor measured in internet (via PC)/smartphone addiction scales and identify the differences in personality/clinical features as well as usage patterns among classified groups. **Methods:** A battery of questionnaire consisting of addiction-related items, personality/clinical features and usage pattern items was administered to middle school students ($N = 691$ for internet addiction; $N = 574$ for smartphone addiction, age = 14). Latent class analysis was used for classifying the subgroups and ANOVA and chi-square test were carried out for examining the difference among subgroups. **Results:** Participants were classified into five subgroups in both internet (via PC) and smartphone addiction. 'Addicted group', 'high-risk group' and 'healthy

group' seemed similar in both addictions, with addicted group showing the highest score in the majority of addiction-related domains/subfactors as well as personality/clinical features, followed by high-risk group, and healthy group coming last among five groups. However, the other groups showed some distinctive characteristics. In terms of internet addiction, there were two groups that showed relatively low score either in salience ('low-salience group') or social neglect ('low-social neglect group'). Meanwhile, two groups in smartphone addiction showed especially high score in tolerance ('high-tolerance group') and positive anticipation ('high-positive anticipation group') respectively. Personality/clinical features and usage pattern of these groups mostly lay between those of high-risk group and healthy group, but interestingly, low-salience group and low-social neglect group in internet addiction showed even higher level of responsiveness personality trait than addicted group. Also, high-positive anticipation group in smartphone addiction showed higher level of responsiveness than high-risk group. **Conclusions:** An allocation of adolescents with problematic internet use via PC or smartphone into certain subgroups according to these results could be helpful for understanding unique characteristics of individuals, and thus effective intervention.

SH-14

Addicted to food? People with excess weight and gambling disorder patients present qualitatively different impulsivity and value-based decision-making profiles

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Background and Aims: The food addiction model posits that dysregulated food intake in at least some excess weight individuals (EWIs) depends on psychobiological mechanisms similar to the ones accounting for addictive behaviors. We aimed to investigate potential similarities between EWIs and gambling disorder patients (GDPs) in core components of addiction, namely, impulsivity and impaired value-based decision-making. Following the food addiction hypothesis, EWs should qualitatively resemble

GDPs in their profile of differences with healthy controls (HCs). **Methods:** Fifty-eight EWIs, 84 GDPs and 110 lean HCs were assessed in intolerance to reward delay [now-or-later test (*NoL*)], impulsivity traits (*UPPS-P* scale), and value-based decision-making tasks [Probabilistic Reversal Learning (*PRL*), and Wheel of Fortune (*WoF*)]. Statistical analyses were performed controlling for sociodemographic variables showing between-group differences. **Results:** In line with previous reports, GDPs, compared to HCs,

showed more intolerance to reward delay (*NoL*), and higher scores in *UPPS-P* negative and positive urgency (*NU/PU*, acting rashly under intense positive and negative emotions) and lack of premeditation (*LPrem*, making decisions without full consideration of the consequences). EWIs, compared to GDPs, showed lower intolerance to reward delay and overall trait impulsivity. EWIs did not differ from controls in tolerance to reward delay, and showed lower scores in *LPrem*, sensation seeking (*SS*, the proneness to engage in novel or arousing activities), and lack of perseverance (*LPers*, the difficulty to persevere in boring or demanding tasks). HCs and EWIs did not differ in *PRL*,

but the two of them outperformed GDPs. EWs made more *WoF* risky choices than GDPs, and both of them made more risky *WoF* choices than HCs. **Conclusions:** Excess-weight is linked to a more restricted pattern of alterations compared to gambling disorder. These alterations are circumscribed to decision-making under risk (*WoF*). Although our findings do not support the idea of a food addiction model, further investigation is needed to elucidate if other indexes beyond excessive adiposity, such as the experience of food craving, would be better capturing the putative addictive properties of some kinds of food for some people.

SH-15

Development and validation of Semi-structured Diagnostic interview for Internet Addiction (DIA) scale

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Background and aims: The aim of this study was to develop and validate a semi-structured interview scale to measure internet addiction. Inspired by recent on the 9-item, DSM-5 Section III internet gaming disorder diagnostic criteria, we developed 10-item Diagnostic interview for Internet Addiction (DIA) (i.e., cognitive salience, withdrawal, tolerance, difficulty in regulation, decrease in other activities, persistent use in spite of negative results, lying about internet/game/SNS use, use internet/game/SNS to avoid negative emotions, interference in role performance, function, and desire.) **Methods:** children aged 7 to 18 years ($n = 100$, 77% boys) were included in this study. DIA scale,

internet addiction scale (K), smartphone addiction scale (SAS-SV, S), Internet addiction Proneness scale (children and adolescents) questionnaire were conducted. **Results:** Results indicated that the DIA of the highly correlated with the scores of the K scale ($r = .405$, $p < .01$), Young scale ($r = .248$, $p < .05$), Internet Addiction Proneness Scale for Children ($r = .538$, $p < .01$), Internet Addiction Proneness Scale for adolescents ($r = .291$, $p < .05$). **Conclusions:** The DIA appears to be a valid diagnostic scale for screening children and adolescents who may be at risk of smartphone addiction. Further psychometric validation of the DIA is required to examine its properties.

SH-16

Predicting Internet Gaming Disorder Symptoms in young adolescents: A one-year follow-up study

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Background and Aims: Gaming addiction in adolescence is evolving into a serious societal problem. An increasing number of adolescents have difficulties in controlling their game play and are at risk for the development of Internet Gaming Disorder (IGD) symptoms already at a young age. **Methods:** In this longitudinal study, 354 adolescents (mean age = 13.9, 48,9% boys) were followed during one year. It was hypothesized that attention problems, social vulnerability and life satisfaction uniquely and in interaction with each other, predicted increase in IGD symptoms. **Results:** Findings of a zero-inflated model revealed a main effect of

social vulnerability and attention problems on IGD symptoms while controlling for sex differences. In addition, it was found that the effect of attention problems on IGD was the strongest among adolescents who were more socially vulnerable and less satisfied with life **Conclusions:** Adolescents with attention problems might have difficulties in directing their attention towards other tasks, placing them at increased risk for developing a gaming addiction. This risk is further exacerbated by social vulnerability and dissatisfaction with life.

SH-17

“Gothic” youth subculture influence on adolescents’ addictive and defensive behaviors

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Background: Non-confident, but anxious, shy adolescents are inclined to seek a safe setting to get self-assertiveness, which an informal youth subculture gives them (Mantione et al., 2013). *Aim:* to investigate how “gothic” youth subculture influences them and what are the addictive and defensive behaviors as inevitable outcomes. *Methods:* 80 teens take part in a research aged $m = 14.7$, $SD = 1.1$; 2 groups – 40 belong to “goths”, and 40 don’t belong to any subculture. There have been used an interview, experts’ behaviors evaluation, Wagner’s Hand Test, the Life Style Index (LSI). *Results:* (1) Communication. Anxiety and passivity decrease, but aggressiveness, demonstrativeness, dependence grow ($p \leq 0.003$). (2) Addictive behavior. The majority of

teens in informal setting (92.5%) have playing addiction: role playing, “gothic” mystic rituals; interpersonal dependence on a leader – imitation, over obedience; chemical addictions as loyal behavior to the group: smoking tobacco, narcotic mixtures, alcoholism. (3) Coping. In stressful situations teens can’t cope constructively: more often than the peers they use defensive and infantile behaviors, including defenses like repression, regression, displacement, denial ($p \leq 0.01$). *Conclusions:* Informal subculture helps teens cope with loneliness, overcome communication and self-expression difficulties. At the same time it strictly regulates, stereo typifies and de-individualizes social behaviors, provokes addictive patterns, prevents productive coping.

SH-18

Gender differences in recreational, at-risk and disordered gambling: An analysis of a non-treatment seeking sample.

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Background and aims: Problematic patterns of gambling such as at-risk gambling and gambling disorder (GD) are associated with substantial burden and costs to the subjects affected and to the society. Studies have pointed to relevant differences between men and women in terms of gambling behavior. However, the majority of the available research was conducted in treatment-seeking samples, which may be associated with significant selection bias. Additionally, gender studies in gambling has largely focused on GD, neglecting recreational and at-risk gambling groups. The objective of this study is to investigate gender differences in distinct levels of gambling activity using a non-treatment seeking sample. *Methods:* We analysed 219 non-treatment seeking subjects. Seventy-three (33.3%) recreational gamblers, 73 (33.3%) at-risk gamblers, and 73 (33.3%) disordered gamblers. The three groups (recreational, at-risk and

GD) were matched for age and gender. The mean (standard deviation) and median age were, respectively 24.4 (± 3.3) and 24.0. Seventy-four percent were males. *Results:* Recreational female gamblers were less affected by gambling behaviour when compared to recreational male gamblers (less gambling frequency, less negative consequences). However, female at-risk gamblers tended to be more severe than male at-risk gamblers, especially in terms of co-occurring psychiatric disorders and symptoms. In terms of GD, both genders demonstrated similar pattern of gambling behaviour and psychiatry comorbidity. *Conclusions:* Our findings suggest that different levels of gambling activity (recreational, at-risk and GD) showed diverse patterns depending on the gender. This study suggests that the progression from recreational gambling to GD may be different in males and females.

SH-19

Effectiveness of self-exclusion: The experiences of gamblers in three Swiss casinos

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Background and aims: The 1998 federal law on gambling and gambling establishments regulates prevention endeavours, including voluntary exclusion. Exclusion periods are valid for at least one year and this applies to all 21 Swiss casinos, whereby entry is effectively prohibited to those that have entered a gambling exclusion program. By law, exclusion must be revoked as soon as the conditions that

prompted its request no longer exist. At this point the person in question, in order to gain access to Swiss casinos, can make a written request for readmission and undergo an interview with a qualified counselor, presenting relevant financial documentation. This study aims to understand the relationship between voluntary exclusion and gambling behaviour, as assessed using the DSM-IV. *Methods:* Partici-

pants consisted of 332 gamblers who applied for and obtained re-admission to the three casinos in Ticino (Mendrisio, Lugano and Locarno) between 2007 and 2014. The data was obtained from voluntary exclusion request forms and from the DSM-IV diagnostic questionnaires filled during the exclusion requests. *Results:* The incidence of problem and pathological gambling was lower among those that have requested two or more voluntary exclusions than those that self-excluded for the first time. The inci-

dence of diagnostic criteria progressively decreased after each readmission. *Conclusions:* Repeated exclusions over time could have a protective function against relapse – which is understood as a return to previous gambling habits – and help develop improved self-control and awareness of one's own gambling behavior. These findings should motivate casinos to increase efforts to promote voluntary exclusion as a mean to maintain and restore controlled gambling.

SH-20

Love and drug addiction as object relations: An integrative Three-Phase Model

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Background and Aims: Love and addiction are developmental phenomena that share the common basis of a subject's relation to an object. Both of these phenomena consist of three key stages: Initial establishment of the subject's relation to the object (infatuation/initial drug use); Advanced relation (long-term relationship/addiction); and cessation of the relation (separation/drug abstinence). A systematic examination of the characteristics of love and addiction reveals many similarities. The subject's relation to the object, in each phenomenon and in each different stage, is reflected in the craving for, and focused attention on the object. Moreover, facial expression recognition, decision making and absorption might contribute to the establishment and maintenance of the relationship. Examination of love vs. addiction also raises the differences between the two. This research's objective was to explore the common characteristics of the two phenomena as well as the way they differ, through an examination of the cognitive, emotional processes and personality characteristics. *Methods:* 91 Participants: Regular cannabis users (N = 16, mean age 29.50, SD = 5.63), men who were passionately in love (N = 14, mean age 25.3, SD = 3.37), men in long-term relationships (N = 26, mean age 23.67, SD = 7.57), and recently separated men (N = 7, mean age 23.50, SD = 10.49), Cannabis control group (N = 15, mean age 26.40, SD = 5.21) and Love control group (N = 13, mean age 25.69, SD = 3.99). Measurements: Craving questionnaire & Visual analogue Scale, Gambling task, Emotional facial expression recognition task, Two-choice reaction time task & Tellegen Absorption Scale. *Results:* High craving for the loved one characterizes the initial and advanced stages of

the relationship, though over time as the relationship progresses, there is a decrease in intensity. Medium craving characterizes the separation stage. Impulsive decision-making patterns were found in all three love stages, though a higher tendency was found in the infatuation stage, compared to the long term romantic love and separation stages. Faster emotional facial expression recognition was found during the separation stage, compared to the long-term relationship stage. Craving and impulsivity were higher during the infatuation stage than the advanced stage of addiction, in contrast to the research hypothesis that these two variables would be as high in addiction. Additional significant difference between love and addiction was reduced facial expression recognition performance among regular cannabis users compared to the infatuation and long-term relationship groups. Intensity of craving for the object was also tested: High craving group (regardless of the object's nature) had more impulsive decision-making patterns, better facial expression recognition performance, increased attentional focus on the object and high absorption ability, compared to low craving group. *Conclusions:* Differences were found in the various stages of the romantic relationship, providing support for the developmental model. Craving was found to be a motivational infrastructure, which organizes the relation to the object, and according to its intensity, facilitates the relation's establishment and maintenance. A high state of craving promotes and facilitates attachment to the object. A theoretical framework for the distinction between healthy and pathological object relationship is proposed. Addiction is seen in the current study as a substitute for a romantic relationship.

SH-21

Hypersexuality and its association with pedophilic sexual interests and criminal behaviors in a German male community sample

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Background and aims: Hypersexuality, sexual addiction or hypersexual disorder describes recurrent and intense sexual fantasies, sexual urges, or sexual behaviors that interfere with other important (non-sexual) goals or obligations (Kafka, 2010). Although hypersexuality has recently received much consideration in the sexual offender literature and is seen as one important risk factor for sexual offending, still not much is known about the prevalence of hypersexuality and its relationship to pedophilic sexual interests and criminal behaviors in the general population. **Methods:** In a large community sample consisting of 8,718 German men who participated in an online study, we assessed self-reported hypersexual behaviors using the total sexual outlets (TSO) questionnaire and evaluated its association with self-reported pedophilic sexual interests and antisocial behaviors. **Results:** Overall, the mean TSO per week was 3.46 (SD = 2.29) and participants spent on

average 45.2 minutes per day (SD = 38.1) with sexual fantasies and urges. Altogether, 12.1% of the participants (n = 1,011) could be classified as hypersexual according to the classical cut-off value of TSO ≥ 7 (Kafka, 1991). Hypersexuality (TSO ≥ 7) as well as the TSO absolute values were positively correlated with sexual fantasies involving children, the consumption of child pornography, self-reported previous property and violent offences but not with contact sexual offending. **Conclusions:** Although hypersexuality is seen as an important risk factor for sexual offending in sexual offender samples, this relationship could not be replicated in a community sample at least for contact sexual offending. Nevertheless, in clinical practice an assessment of criminal behaviors and pedophilic fantasies in hypersexual individuals and vice versa hypersexuality in men showing antisocial or pedophilic behaviors should be considered.

SH-22

Behavioral addictions in prebariatric surgery patients

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Background and Aims: The study aimed to estimate the point prevalence of addictive behaviors in patients with morbid obesity seeking bariatric surgery and to determine possible associations with age, gender and body mass index (BMI). **Methods:** The study included 142 patients (79.6% women, Mage = 43.94 \pm 12.01 years; MBMI = 48.00 \pm 7.33 kg/m²) who answered standardized questionnaires assessing eating disorder symptoms and the following substance-related and behavioral addictions: food addiction, buying disorder, substance use disorders (alcohol, tobacco), gambling disorder, Internet addiction, excessive exercising and hypersexuality. **Results:** Eighty-six percent of the sample showed disturbed eating, 8% tobacco use disorder, and

2% alcohol use disorder. Moreover, the following point prevalence rates for behavioral addictions emerged: food addiction 28%, gambling disorder 7%, buying disorder 19%, problematic internet use 2%, hypersexual behavior 1%, excessive exercising 1%. 28% reported food addiction symptoms as measured with the Yale Food Addiction Scale (YFAS 2.0). Patients with food addiction showed more symptoms of depression, anxiety, eating disorder and buying disorder than those without food addiction. **Discussion and Conclusions:** The results indicate a fairly high prevalence of behavioral addictions and an overlap between food addiction and buying disorder in patients with morbid obesity seeking surgical treatment.

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The aim of the Journal of Behavioral Addictions is to create a forum for the scientific information exchange with regard to behavioral addictions. The journal is a broad focused interdisciplinary one that publishes manuscripts on different approaches of non-substance addictions, research

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